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COVER: BLACK BEAR, by Durant Ball, Newport News

Editorial

LEGISLATION

What didn't happen during the 80th session of the Virginia General Assembly was as important to the state's sportsmen as what did. The Game Commission was exempted from a government reorganization bill that would have made the Executive Director an appointee of each successive Governor rather than of the Commission. Sportsmen appeared in large numbers at the hearings emphasizing they wanted to keep politics out of the management of the state's wildlife resources. Another bill would have allowed virtually every stockholder in every corporation that owned land in Virginia to hunt, fish or trap on that land without a license.

Among the legislation that passed was an omnibus bill that updated or repealed obsolete acts and more clearly defined Game Commission powers. In it was a provision that county ordinances regulating weapon caliber, hunting from roads, etc. would not be enforced unless the Game Commission was supplied a copy of such ordinance by May 1 of the year in which it was to become effective. The authority to levy damage stamps for big game hunting in specified counties will be restricted in counties where a surplus of twice the annual cost of damages exists in the fund. These funds

may no longer be used to pay bounties, or to stock fish or wildlife except as permitted by the Game Commission. The Game Commission was also authorized to appoint additional agents for the sale of these stamps where necessary. The Commission was also empowered to appoint agents in addition to the court clerk to sell hunting and fishing licenses in any county or city where such need exists.

One section establishes definitions for "endangered" and "threatened" species. An endangered species is one in danger of extinction over a significant portion of its range. Threatened species are those likely to become endangered in the foreseeable future. Endangered species are automatically protected in Virginia when added to the Federal list but the Game Commission has further authority to declare other species endangered or threatened and offer them protection.

One new law makes it specifically a misdemeanor to recklessly handle a firearm so as to endanger life, limb or property and provides for revocation of hunting license for up to 5 years upon conviction.

A new permit fee of \$50 for trout catch-out facilities will permit patrons to fish on the premises without a license. A five mile segment of the Appomattox River below Lake Chesdin has been designated a scenic river.

—HLG

Letters

SAVE OUR WETLANDS

We are writing because of our concern for the preservation of breeding grounds for waterfowl and fish in Virginia. We are new property owners with imminent plans to build a retirement home on Mattox Creek, which is near Colonial Beach, Virginia. We recently attended two public meetings — one held by the Zoning Commissioners and the other by the Westmoreland County Board — the purpose of which was to consider applications made for permits by two landowners — Bowie and Pollard, to build a marina, railway, camping ground on adjacent land which is zoned Agriculture A-1. In spite of vociferous opposition by neighbors, the permits were granted and the business will proceed as planned. It might also be noted that there is an existing marina — Harbour View — only a stone's throw away.

Mattox Creek is a lovely, quiet spawning area for fish, ducks and geese. We are told that the rare Whistling Swan winters in the vicinity. We deplore the probability of the area being polluted with noise and oil spills which surely will result from this venture.

Perhaps nothing can be done at this point to prevent this deterioration of our wetlands. At least, we feel better for having written to you. It is our hope that pressure might be applied to the proper authorities to place restrictions on this proposed business. If there is anything you can do, we would be most grateful.

Charles & Marguerite Buckley
Arlington

VOICE OF THE TURTLE

Thanks for the recent articles on fish and turtles in Virginia. In my natural history work I've often been frustrated by lack of precise distributional and annual cycle information on many important groups of animals in Virginia. These articles are a real help. I would like to mention that in work in western Louisa County I've found the Spotted Turtle (*Clemmys guttata*) in two separate locations. These would appear to extend the known range of this species some ten miles west in this county. I would also like to have Mr. Mitchell (*Turtles in Virginia*, June, 1976) contact me about the prospects for finding the endangered Bog Turtle (*Clemmys muhlenbergii*) in this particular area. It is located over an igneous intrusion and has a remarkable number of meadow wet areas as a result of its solid configuration. Every habitat description I have for this turtle plus the highly disjunct nature of its range give hope for its discovery here.

John B. Buzuin, Jr.
Louisa

SOUTHERN HOSPITALITY

I enjoy the letters in the *Virginia Wildlife*, especially the one titled "Get Off the Road." That one was really a "dilly" — a perfect example of the Pot calling the Kettle Black. I agree the police and wardens should stop hunting in the roads. They should also stop and search pick-up trucks coming out of the back woods.

It really amuses me in the fall to see those city slickers throw a dog box on a "CB"-equipped pick-up truck and take off for the country. They don't pay a dime's worth of taxes, but expect to come out and hunt on private property without even asking for permission.

S. H. Burton, Sr.
Chesterfield

This is one city slicker who pays his share of taxes. You are right, however, that most hunters expect more hospitality from rural folks than they are willing to offer in return.—Ed.

CRAZY CUCKOOS

I noted in the letter of the July, 1976 issue of *Virginia Wildlife* that Allan W. Stewart quotes me as saying that the yellow-billed cuckoo is less common than the black-billed cuckoo in eastern Virginia. I recall receiving this excellent specimen of a yellow-billed cuckoo from Mr. Stewart but I do not believe that I suggested that it was less common than the black-billed species. Black-billed cuckoos are, in fact, relatively uncommon in Tidewater, Virginia whereas they may be the more common form in some parts of the mountains.

Mitchell A. Byrd
Williamsburg



Pop Your Cork for BASS

Cork Bodied Bugs

By PETER ROWE

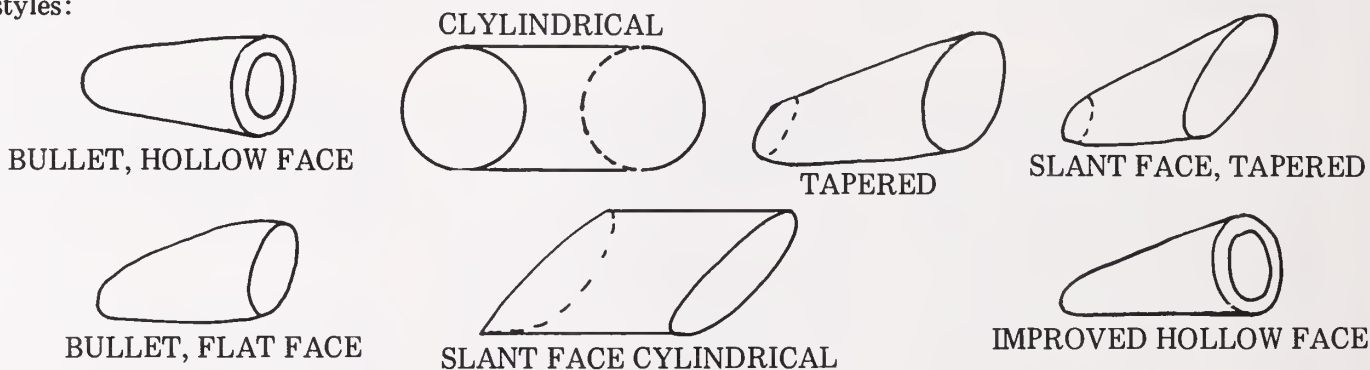
A bit of cork, hook and feathers moves slowly through the air, driven by the heavy flyline. Line and leader hit the water in a gently curving arc and the bass bug sets down on the water as light as a feather. A lift of the rod tip and the bug darts forward with a gurgling pop, sending waves of sound and motion. The big largemouth guarding his nest lurches out toward the intruder, sucking it up in his adequate mouth; the last annoying bug he will ever have to worry about.

The invention of the bass bug is attributed to Ernest H. Peckinpugh of Chattanooga, Tennessee, who, of course, made them by hand around the turn of the century. Since that time the bass bug has remained a popular and effective lure for surface feeding fish.

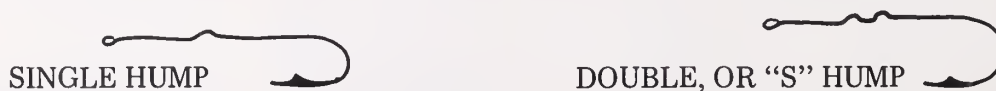
If you are inclined to be the happy angler on the other end of that fly line, here's how to make an assortment of bass bugs that will not only catch bass but many other kinds of surface fish as well.

SPECIAL MATERIALS — in addition to standard.

(1). Bodies — may be made of cork, plastic, wood, sponge rubber, etc. These are some of the more popular styles:



(2). Hooks. Always use humpshank hooks, sizes 10 to 1/0. Always buy the best grade, hand-forged hooks you can get. There are two basic types:



(3). Razor Blade. Single edge, stainless steel. Buy a package. They will get dull fast. Small knives like X-acto will not do the job a fresh, sharp razor blade will.

(4). Needles. Medium to large assortment, large enough to handle hackle. (5). Rubber Hackle. Get some in all three sizes, small, medium and heavy. (6). Eyes, Lips, etc. Small and medium aluminum "lips" or "wiggling discs." Glass-headed pins in various sizes to use for "pop eyes." You will acquire other stuff for jazzing up your bugs as you go along. (7). A good quality cork sealer. (8). Waterproof cork cement. (9). A good selection of testors, pla-enamel or similar paint and an assortment of small brushes. Take a couple of brushes and trim all

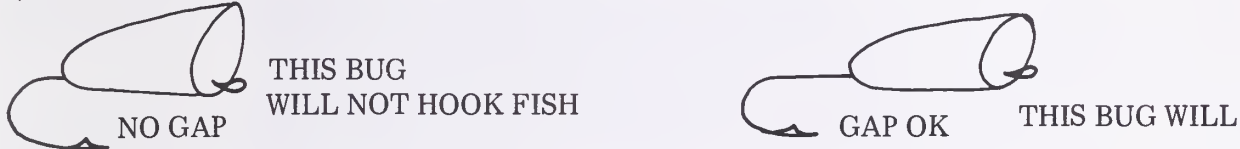
but 3 or 4 bristles off for fine work. (10). Toothpicks. A good supply of both round and tapered ones. Make sure they are plain unfinished wood, as the paint or coloring on the fancy "party pics" runs. (11). Sandpaper. Several sheets, medium and fine grit, for shaping and smoothing corks. (12). Grinding stones. A couple of the smaller, cone or bullet-shaped grinding stones for your electric drill are excellent for hollowing the noses of flat corks.

BODY CONSTRUCTION

Fitting the Body to the Hook.

(1). Place hook in vise so that point is covered. Wind over hump and back, tie off and cut off thread. This will make the body hold better. Winds need not be close together, in fact it's better if they are not.

(2). Select body in size and length so as to allow sufficient clearance at hook point for good hooking.



(3). Plan body placement with some thought as to the bug's riding qualities. Experiment. Will the bug float high or low? Nose up, nose down, or flat. A hollow nosed popper should float so as to have some "bite" on the water or it will just "skitter," not "pop."



(4). Slotting or slitting cork.

A. Slotting. When small cork is being placed on large hook it is a good idea to take the extra time to slot the cork. A "V"-shaped wedge is cut from the bottom of the body and the tip of this "V" is sliced off. The hook is fitted in the slot and the ledge cemented back in place over the hook.

B. Slitting. Cork is sliced lengthwise where hook is to be inserted. Do not cut too deep or cork will split. Slide cork from back of hook toward eye, forcing gently, then adjust to final position.



(5). Gluing.

A. Before placing body on hook coat hook well with cement.

B. Slide or place body on hook.

C. Replace wedge, gluing well.

D. It is often worthwhile to take the time and trouble to wind the cork fairly tightly and glue down the windings. This will help keep the cork body from turning on the hook.

E. Fill slit with plenty of cement to level of cork.

(6). Lips, eyes, etc. Place these on the body now, before applying cork sealer. Cut off glass-headed pins and insert to make "pop eyes." Bend wiggling disc to proper angle and insert at bottom of body at head, coating prong with glue first. Put eyes at level where they can be seen by fish from below.

(7). Sealing. Two to four coats of sealer to give a smooth, waterproof surface for your paint. Put it right over the eyes and wiggling disc to make them blend in smoothly.

(8). Painting. Usually you will want to paint the body before hackle, tail, and wings go on. Paint your favorite fish-getting colors. Add spots and dots, paint eyes on or paint over "pop eyes." Let the bug dry overnight before you add the dressing.

DRESSING

Tails. Hackle tips, bucktail, rubber hackle, peacock herl, feather fibers from silver, golden pheasant tippets, etc. Hackles. Placed on after tail and wound full to base of body, tied off securely and then a few drops of head cement added at the base of the body where the hackle is tied off. Hackle may be tied in by the tip or the base, depending on how you want it to look.

Rubber Legs. Place 1-3 rubber hackles through eye of suitable needle and push slowly straight and level through cork at desired location; pull legs through so half is on each side of bug and trim to desired length.

TYPES AND DESIGNS

Basically the bug is designed to imitate some form of aquatic or terrestrial food consumed by fish, such as moths, bees, dragonflies, mice, frogs, minnows, etc. There are many designs and some of them get pretty far-fetched and fantastic. Probably a fair number work, not because they look like food to the fish, but because they make the fish mad and he attacks. This is especially true when fish are on the spawning beds. You should tie-up and include in your tackle a good selection of three basic types:

(1). Poppers. You will use these about 50% of the time. They should make a good, firm "chug" or "gerblub" when the rod tip is raised. If they just splash or skitter you designed and built them wrong.

(2) Skitter Bugs. Bullet headed, with a collar of hackle and a skirt of long streamer feathers. These resemble a wounded or sick minnow on the surface. The bullet head will work through grass and snags without hanging up better than the popper. You can add a lip or wiggling disc for a darting, diving action, but don't use one that is too big or you may break your rod tip when you try to pick it up off the water. The hook may be dressed with ducktail as well as feathers. Experiment.

(3). Moth-type. You should have a selection of these which create a lifelike impression of a large insect which moves quietly on the surface. On bright, still days, in clear water, where there is no emergent plant life, a fish may be put off by a noisy bug, but it will be attracted by faint movement, ripples, or the silhouette of this quiet swimmer. Fish it SLOW and easy and be ready for a strike at unexpected minutes.

SOME DESIGNS YOU WILL WANT TO TRY:



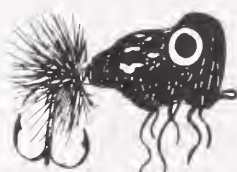
SKEETER SKITTER BUG



TAPERED CORK POPPER



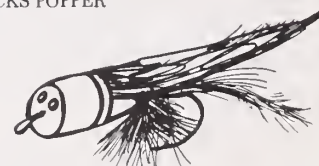
PECKS POPPER



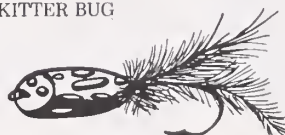
IMPROVED BODY-POPPER
WITH RUBBER LEGS



PECKS SKITTER BUG



CALMATH MOTH TYPE



CORK FROG



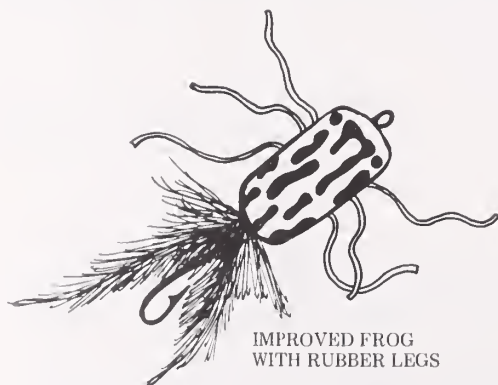
SLANT FACE POPPER



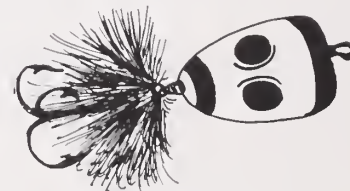
PETE'S SPENTWING MOTH OR
"PETER POPPER"
(a misnomer — it does not pop)



HOLLOW FACE BASS BUG



IMPROVED FROG
WITH RUBBER LEGS



LA BOUBE'S BASS BUG



J'S POPPER



WOUNDED MINNOW TYPE

Illustrated By Denis Dale



Photo by L. L. Rue

HUNTING AND THE Gray Squirrel Population

By BILL WEEKES

What are the effects of hunting on the popular gray squirrel (*Sciurus carolinensis*)? For decades wildlife specialists have pointed out that small game cannot be wiped out by hunting pressure, that a core of survivors, the "smart" ones, will continue to reproduce and soon build up, in the off season, those numbers depleted by hunting.

Studies zeroing in on the effects of hunting on the gray squirrel were conducted by Charles M. Nixon, who evaluated these effects over a ten-year period on a research area in Ohio, and by Henry S. Mosby, who evaluated these effects over a similar period at Virginia Polytechnic Institute.

A number of questions are brought to mind before the effects of hunting on squirrels can be appreciated. First, how many squirrels are there in the population

(density) prior to hunting the first year? How many squirrels prior to hunting the next year? Are the changes in density significantly up or down from year to year? If the population decreases from one year to the next, is this decrease due to the culling brought about by the previous year's hunting, or due to some factor more significant?

The density of a squirrel population must be estimated. Obviously it would be impractical (perhaps impossible) for a researcher to count all the squirrels in a population. He must sample the population and make an estimate by using statistical tools.

Another factor reflecting the status of a squirrel population is its sex and age composition. A young population is a growing population; an old population, a declining population. How does one age and sex a squirrel population? For animals trapped, counted and

released, only their external features can be used as clues: development of genitalia and body weight (neither always reliable) and coloring and hair characteristics. For harvested squirrel, young can be differentiated from old by eye lens weight and the degree of cartilage development in the forepaw (by X-rays).

Nixon separated his gray squirrels into four age groups: adults (greater than 15 months of age); yearlings (10-14 months); subadults (5-9 months), and juveniles (less than 5 months). These are age categories of squirrels that hunters confront during the fall season.

A common consensus would divide squirrels into three basic groups: those born during the years in which they are taken by hunting, either in early spring or in the late summer and adults, those born prior to the hunting year. Because gestation (period of pregnancy) is 44 days, the mating season would fall into two periods; late December-January for spring offspring, and late May through mid-July for summer offspring. Squirrels may mate and bear offspring at any time during the year, but the peak of littering normally occurs in late spring and late autumn.

Fall squirrel hunters may then expect to see or harvest squirrel greater than two years of age, or those ages as listed in the chart. Suppose the hunting season were in 1977. Below would be the most prevalent age of less than two years the hunter would confront, depending on which month he was afield:

| | Ages in Months | | | |
|-----------|----------------|------|------|------|
| | Sept. | Oct. | Nov. | Dec. |
| Born | | | | |
| Feb. 1976 | 19 | 20 | 21 | 22 |
| Mar. 1976 | 18 | 19 | 20 | 21 |
| July 1976 | 14 | 15 | 16 | 17 |
| Aug. 1976 | 13 | 14 | 15 | 16 |
| Feb. 1977 | 7 | 8 | 9 | 10 |
| Mar. 1977 | 6 | 7 | 8 | 9 |
| July 1977 | 2* | 3 | 4 | 5 |
| Aug. 1977 | 1* | 2* | 3 | 4 |

*Squirrels stay in or near the nest for ten weeks after birth.

On the Ohio study area, Nixon found squirrel fall-to-fall densities fluctuated in six of the ten years his study was conducted. The following information indicates the density (squirrels per hectare) and kill (squirrels per hectare) on the research area. The hectare (ha) equals 2.47 acres on the metric scale.

SQUIRREL DENSITIES (Ohio Study)

| Year | Preseason Density | | Hunting Pressure gun hrs/ha |
|------|-------------------|---------|--------------------------------|
| | sq/ha | Kill/ha | |
| 1962 | 1.17 | 0.49 | 1.67 |
| 1963 | 1.33 | 0.38 | 3.27 |
| 1964 | 2.11* | 1.09 | 7.88 |
| 1965 | 1.90 | 1.33 | 7.11 |
| 1966 | 3.18* | 1.46 | 5.27 |
| 1967 | ---* | 0.01 | 0.60 |
| 1968 | 2.06 | 1.09 | 3.08 |
| 1969 | 1.61 | 1.12 | 5.55 |
| 1970 | 2.68 | 1.59 | 6.72 |

*Indicates significant changes in estimated densities from the previous fall of adult and subadults.

The significant differences in gray squirrel densities were attributed not to harvesting of the previous fall, but to annual seed crop conditions. The rise in density from 1962 to 1966 occurred at a time when mast crops were good to heavy each year. This added available nutrition to the squirrel population. The severe drop in density in 1967 was the result of a severe frost in May 1966, which wiped out mast crops and either forced squirrels to emigrate or killed them by starvation. The adult population (the breeding portion of the population) was reduced drastically. Recovery in 1968 resulted from above-average mast crop and a predominantly adult population, which either had returned "home" or newcomers who emigrated. Good food years enable better survival of the young of the year, better survival of breeders, reduction of emigration, and an increase in female productive potential. Some see the squirrels' dual breeding season as an evolutionary entity, giving a squirrel population an added capacity to "bounce back."

The Nixon study intimates that hunting could benefit a squirrel population in maintaining itself. Hunting acts to lower densities in the fall. High density appears to affect the overall survival of adult females to a greater extent than their harvesting under the gun. Obviously, the survival of the adult female population is necessary to keep the population in existence. According to Nixon, pregnant and nursing female squirrels are intolerant of other breeding females. The range of female survival, according to the study, was highest when the population densities were 70 squirrels per 100 acres, lowest when densities exceeded one squirrel per acre.

Nixon concluded that hunting pressure could significantly help reduce a squirrel population, especially when that population is suffering from lack of food.

To summarize: Hunting benefits a squirrel population by reducing densities later to be found intolerant to rearing females; but hunting should only begin after the rearing season so that the young of the year can act as buffers in protecting a "happy" proportion of breeders for the next breeding season. Hunting in bad mast years should be discouraged in order to allow survivors to reproduce for better food years.

Mosby studied the effects of hunting on gray squirrel populations on the VPI & SU farm woodlots from 1954-59. The 7.9-acre North Crumpacker Woods was the control area and the 17.9-acre Crumpacker Woods was the hunted (experimental or exploited) area. Data were gathered from 1952-56 by trap-retrap techniques and from harvested animals.

One notable difference between the findings of Mosby and those of Nixon was the effect of mast conditions on estimated population densities. Mosby found mast scarcity or abundance had "no measured influence on the average number of young produced, or on the total squirrel population in each woodlot." He acknowledged this to be contrary to the results of other workers.

The most significant finding in this study was Mosby's conclusions concerning mortality and recruitment (replacement by reproduction) between the two populations. Life table data revealed that natural losses accounted for 25.2 percent of the annual mortality for the control population and only 10.2 percent for the exploited (hunted) population. These calculations suggest (in light of the fact that the annual mortality during the study was 42.7 percent for the control population and 47.4 percent for the hunted population) that hunting removed a proportion of the annual population recruitment that would have been otherwise lost to "natural" causes.

Squirrel density was much higher in the Virginia woodlots than those found in the Ohio study, and in both Virginia woodlots, the home ranges (the area in which a squirrel will move during its normal daily activity) averaged a minimum of less than two acres.

Finally, a "cohort" is a group of animals born in the same year. The turnover period is that time it takes before the cohort dies off.

In the Mosby study, the turnover period for the control group was 6.2 years, as compared to 7.2 years for the hunted population. This difference was found to be significantly different.

Why should it take a hunted population longer for its last members, born in a specific year, to die off? Would the hunting have allowed the density to be reduced enough to permit the longer survival of some individuals because it permitted these animals to secure more than their share of available food? This is a possibility.



Photo by L. L. Rue

SCAT Skunk!



By KATHERINE W. MOSELEY

We had guests coming for dinner who were due to arrive any minute. On the lawn beside the driveway wandered a slow-moving skunk that stopped to root out a grub or to paw over a stone. It was nonchalant and completely at ease in the early twilight. We could imagine party-dressed people afraid to leave their cars, and apprehensive throughout the visit.

So my husband went outside to shoo away the skunk--at a respectful distance. "Shoo," he called and clapped his hands. The skunk looked reproachfully over its shoulder as if to ask, "Who, me?" My husband was firmer and louder, "Scat, Skunk!" At which the little black-and-white furry animal rolled over on its back and looked up at him like a friendly cat waiting to have its stomach scratched.

When the cars arrived it departed with dignity even as one woman screamed, "I saw a polecat. Do you have them around?" "No, but we do have an occasional skunk."

"Aren't they the same?" asked a Virginian who made an easy and frequent mistake. A polecat is a small, bad-smelling weasel-like mammal of Europe. Polecat hunting was a popular sport in the north of England many years ago. The chase was conducted on moonlit nights with a pack of hounds.

When the first settlers arrived on this continent it seemed logical to assume that skunks, capable of emitting a very foul smell, must be some kind of polecat. William Byrd wrote in his journal of 1728, "The poor Polcat's safety lies altogether in the irresistible stench of its Water." The name and fame have persisted

even though the polecat and the skunk are entirely different mammals.

Skunks were natives of this continent long before Europeans arrived. The Indians ate skunk as a favorite food. They wore its fur after much airing and drying. Skunk oil was used for medicinal purposes. It was said to have great penetrating qualities which gave it importance in ointments. The Algonquins called the animal "se-kaw-kawn" meaning where the skunk cabbages grow. It was also known by other tribes as seganku. Its generic name, "Mephitis," is closer to the truth. Mephitis is defined as a bad-smelling vapor coming out of the earth, or a stench.

Skunks became part of our lives this spring when the Hazel River went on a rampage after heavy rains. Along the banks are many rocky ledges under which are clefts, there are exposed roots of hollow trees, nearby are abandoned woodchuck holes, all of which are desirable skunk dens. As the waters rose the skunks undoubtedly became refugees. The night of the flood we saw at least seven different ones under our outdoor kitchen light. They were easy to identify because of individualistic arrangement of the black and white fur. One was all black except for the tip of the head which was white and, we have learned, is known as a star skunk. Another seemed to have a white shawl over its head and shoulders, some wore broad stripes, some narrow. The white stripes might converge at the large posterior half of the body. No two were exactly alike. They took over the yard for several nights with only one episode of the vile smell. As the river fell, they undoubtedly went back to their former homes. All except the one who came to the party which we suspect has taken lodging under the green shed.

The skunk's head is slender with a short, naked muzzle, somewhat like a pig's, to be used as a tool for rooting the earth for grubs and insects. It is slow and deliberate in its activities, waddling about on shorter forelegs than hindlegs and on the soles of its feet rather than on toes. The great plume of a tail is carried at half mast. At the slightest sound that might mean danger, the tail rises.

The skunk's disposition is mild, and it is suspected that it also hates the offensive odor of its defensive weapon as it carefully manages to not get its own fur tainted. It sprays an enemy only as a last resort and even then gives ample warning before shooting the noxious fluid at the eyes of its opponent. The skunk stamps the ground with its forepaws and vigorously claws at the earth. If this does not suffice, it turns its back and raises its tail ready to fire. There are two anal glands under the tail, each of which has a tube that can protrude and let loose the vile yellowish-green chemical, nbutyl mercaptan, in a spray. Because the discharge is so disagreeable to all other creatures the skunk is usually unmolested and rambles about wherever it pleases in an aura of self-confidence. The striking patterns of the furry coat of the animal is an aid to survival. Its conspicuous colors are meant to be, and are, a warning that an attack will bring on unpleasant, almost unbearable, consequences.

We have watched the skunks, which are nocturnal animals, take food from the board outside our door under the light. They prefer to pull morsels off the board and onto the grass. They are very slow and almost dainty eaters. They never stuff food into their mouths, as do the opossums, nor do they wash their faces after eating, as do the opossums. However, they carefully lick their toes if the food was sticky.

Skunks are found in most of the United States and from southern Canada to northern Mexico. Perhaps they are most at home in open woodlands and fields, in valleys of streams, and brushy borders of creeks. In the extreme north they grow quite fat in late summer to help in winter survival. Skunks do not hibernate but will retreat to their dens in the severest weather. Often several skunks will huddle together to share body heat.

The males begin to wander about in February hunting females. After a couple has paired, I have been told the courtship includes a dance. The female struts

before the male with back arched while he patters his front feet. Then they begin a stiff-legged dance by bouncing forward to each other, touching noses and then bouncing backwards to repeat the performance several times.

Skunks often dig their own burrows for the nest for the young rather than using old ones. There is one litter of three to eight a year. The babies are born in late April or early May and are helpless until they are about five weeks old when they are able to follow the mother, stringing out behind her in a single file, as she feeds and teaches them where to find food. She ambles along at night with her little parade, turning logs for termites, stones for worms, or rooting in the grass for grubs. She takes them to the river for tadpoles and minnows. Early in life the young skunks have learned about their curious built-in spray guns.

To many the skunk is a loathesome animal whose very name is a vilification. "He's a skunk," or "He's been skunked," are not intended as words of praise. The animals' true virtues have never been appreciated and its economic value only recently appraised.

At one time their fur was considered their only asset and good prices were paid for prime skins. The blacker the pelt, the more valuable the skunk. The skins were treated and dyed and sold as Alaskan sable or black marten. When the Government passed a law demanding honest labeling of any fur garment the bottom dropped out of the skunk market.

The skunks' odorous musk is bought, deodorized, and refined. The liquid that remains has a great capacity as a fixative to retain aromas. This oil blended with pleasant fragrance results in the finest and most expensive of perfumes.

Economically, skunks are among our most valuable animals by rendering an important service to agriculture. The skunk is carnivorous and excels as a mouser and will eat lizards, snakes, frogs, salamanders and, unfortunately, small poultry, birds, and their eggs. However the bulk of the skunks' diet consists of insects.

For some reason it specifically enjoys as food the insects that do the most harm. It will eat its weight many times over in tobacco and tomato worms, potato bugs, cut worms, white grubs in the lawn, many beetles, and the larvae of yellow jackets and earth-nesting insects. Thousands of little cone-shaped pits in the ground reveal where the skunk has dug out pests.

We really prefer that the skunk not live under the green shed. When my husband trundles out the riding lawnmower, there is a brief warning scent that arises from under the floor. So far there has been no real confrontation with a full blast. Last year we were among the few in Culpeper County who had no Japanese beetles and we do not use insecticides. Do we dare give credit to the resident skunks who root for injurious insect larvae?



Twinleaf

By ELIZABETH MURRAY

Illustrated by Lucile Walton

April 13th is rather a special day in Charlottesville. On this day, in 1743, Thomas Jefferson was born. On this day, each year, the University of Virginia celebrates Founder's Day. And on this day, so the story goes, the twinleaf (*Jeffersonia*) blooms at Monticello.

The story is often true. Twinleaf is a late spring bloomer and may very likely come into flower around the end of the second week in April. The first leaves appear in March--rolled up and often confused with bloodroot--and gradually unfurl. A month or so later a flower stalk shoots up from the ground and a flower opens several inches above the leaves, blooms fleetingly and is quickly succeeded by the capsule, a very striking pitcher-shaped structure which persists for some weeks. When the seeds are ripe, the pitcher splits round a horizontal lid which lifts up and the seeds are released. The gradually drying pitcher remains on the plant for some weeks, during which time there is great growth enlargement of the leaves. Finally both capsule and leaves die back so that by July there is no sign on the surface of the presence of the twinleaf plant.

Twinleaf used to be called *Podophyllum*, the genus which includes Mayapple. On May 18th, 1972, Benjamin Smith Barton read a paper to the American Philosophical Society in which he renames the plant after his friend, using the following arguments:

"From the account which I have given of this plant, I have little doubt that you will agree with me in considering it as a genus, distinct from the *Sanguinaria* and the *Podophyllum*, to both which, however, it must be confessed, it bears considerable relation. As I have not found it described by any authors, except Linnaeus and Clayton, neither of whom had seen the flowers, and as it is, certainly, a new family, I take the liberty of making it known to the botanist by the name of *Jeffersonia* in honor of Thomas Jefferson, Esq. Secretary of State to the United States.

I beg leave to observe to you, in this place, that in imposing upon this genus the name of Mr. Jefferson, I have had no reference to his political character, or to his reputation for general science, and for literature. My business was with his knowledge of natural history. In the various departments of this science, but especially in botany and zoology, the information of



this gentleman is equalled by that of few persons in the United States.

Of the genus which I have been describing, we, as yet, know but one species, which I call *Jeffersonia Binata*."

Jefferson was in Philadelphia at the time, so it is likely that he was at the meeting. The paper was published in the Transactions of the American Philosophical Society the following year, together with Barton's drawing of twinleaf which is reproduced in the current edition of Thomas Jefferson's Garden Book. The plant is now called *Jeffersonia diphylla*.

It is usually included with Mayapple, umbrella-leaf, blue cohosh and barberry in the barberry family or Berberidaceae, although sometimes it joins Mayapple in a separate family the podophyllaceae. *Jeffersonia* has fibrous roots and a scaly base above ground from which the leaf and flower stalks arise directly. The plant is only about 6-8 inches high when it blooms, but later it becomes twice as tall. The leaves are only partially developed at flowering time. When fully matured they are an irregular double-kidney shape, deeply cleft into two almost equal lobes--hence the name twinleaf--and whitened underneath with a faint bloom.

The flowering stems have no leaves and only one flower per stem. There are four (sometimes 3 or 5) sepals which fall off very early, 8 white petals and 8 stamens. In China there is another species *Jeffersonia dubia* which has deep lavender flowers and bronze leaves.

Our *Jeffersonia* is distributed in moist woods throughout the northeastern states, south to Alabama and west to Wisconsin and Iowa, but it is not particularly common and should be treated with respect. It is fairly easy to transplant but extremely difficult to germinate from the seeds. In the spring of 1807 Mr. Jefferson planted twinleaf in one of the oval beds in his own garden and now, thanks to Mr. Crawford, there are once again flourishing clumps of *Jeffersonia* at Monticello.

Conservationgram

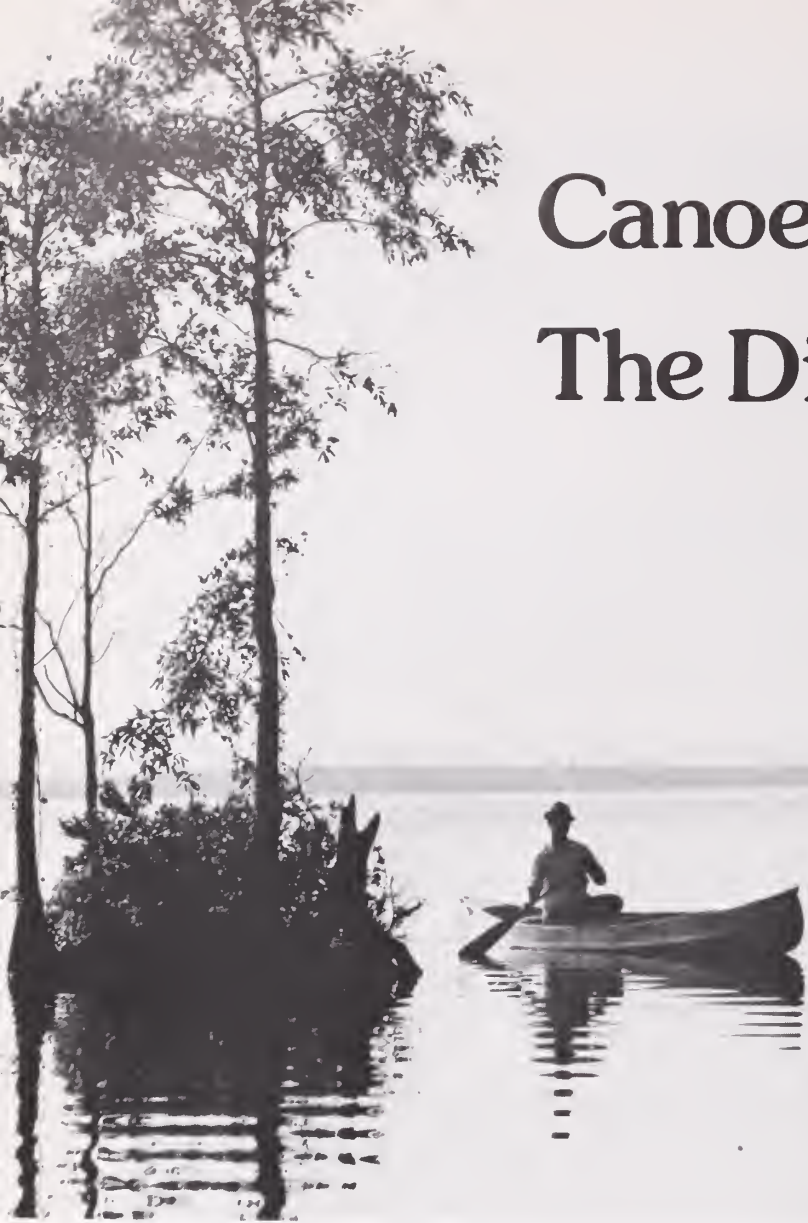


ENGLE HEADS NEW COMMISSION DIVISION. James W. Engle, Jr., Land Coordinator for the Virginia Commission of Game and Inland Fisheries' Game Division, has been named as Chief of the newly created Division of Lands and Engineering by the organization's Executive Director, Chester F. Phelps. Engle has been employed with the Commission since July 1949. He holds a B.S. Degree from VPI & SU and a Masters Degree in Wildlife Conservation from the same institution. As head of the new Division, Engle will be responsible for all aspects of land acquisition and his Division will furnish advisory service to the other divisions as required. In the other facet of the Division, Engineering, the responsibilities involve the preparation of all pertinent details pertaining to the building of boat ramps, public fishing lakes and fish hatchery rearing stations, to mention a few.

VIRGINIA FORESTS TO WILDERNESS: Several areas in Virginia are being considered under provisions of the Wilderness Act. All five areas are in either the George Washington National Forest or the Jefferson National Forest, which have a combined total of nearly 1,600,000 acres of federally owned land in Virginia. The candidate areas for wilderness designation are St. Marys River Watershed, 20 miles south of Staunton and covering approximately 10,000 acres; Rich Hole, 15 miles northwest of Lexington with about 6,500 acres; Ramseys Draft Wilderness Study Area, 20 miles northwest of Staunton with some 15,000 acres, and Peters Mountain Wilderness Study Area, 20 miles northwest of Blacksburg with about 5,000 acres.

ENDANGERED WILDLIFE STUDIED BY COMMISSION. The Virginia Game Commission, in cooperation with the U. S. Fish & Wildlife Service, has begun a program of endangered species investigations. The studies will cover a variety of endangered birds, animals and aquatic life. The new program will determine where the several endangered species are located, the extent of their range, their habitat requirements, and limiting factors. A plan for the management and protection of the various species will result from the work when feasible. Animals included in this initial phase are the brown pelican, Southern bald eagle, peregrine falcon, red-cockaded woodpecker, Indiana bat, Delmarva fox squirrel and the Eastern cougar. Included in the aquatic projects is a cooperative plan with the TVA to study freshwater mollusks and a project to be carried out by one of the universities in Virginia to look into the status of the Virginia Fringed Mountain Snail. Funding for the project will be provided by the Virginia Commission of Game and Inland Fisheries and the United States Fish & Wildlife Service. Cost of this phase of the program will be \$90,000,--\$30,000 provided by the Commonwealth of Virginia and \$60,000 by the Federal Government. The projects should provide some very interesting information. The cougar investigation is designed to obtain proof as to whether or not the Eastern cougar is present in Virginia, and the three bird related projects (bald eagle, brown pelican and red-cockaded woodpecker) will determine the range of these birds in Virginia and help provide for better management and protection of these now scarce birds. Length of time varies for these studies, with some scheduled to run to mid-1981.

Canoe Camping In The Dismal Swamp



Two canoeists paddle down the long canal heading to Lake Drummond from U. S. 17 and the Lake Drummond Truck Stop and Marina. It is a three-mile paddle to the lake.

By STEVE PRICE

Not long ago one of America's foremost outdoor writers wrote, "Give me a good canoe camping outfit and with a stout partner I could fashion a kind of heaven. . ." So could I, too, and I have many times in the past as I took my own canoe to explore some remote waterway. One of those trips was to Great Dismal Swamp, along the North Carolina-Virginia border.

As my paddle and portage partner of several past expeditions, Ted Buddine of Durham, North Carolina, and I soon discovered, the swamp isn't a dismal place at all. We found instead, a clean, uncrowded campground surrounded with a beauty and serenity that are all too infrequent these days. No one knows quite how large the swamp is, but estimates put its area at around 600 square miles. Spongy peat covers the ground, while a dense growth of juniper, cypress, red maple and wild cherry make up the forest. There are over 35 species of trees growing here — a fortune in furniture and building materials if they could ever be harvested.

VIRGINIA WILDLIFE



Ted and I entered this strange land by way of a narrow canal just off U. S. 17 at the Lake Drummond Truck Stop, just across the Virginia state line. There are several other routes in to the lake itself from Suffolk and Portsmouth. The waterway, dark from the acid of the cypress trees, was delicately calm, and our paddles left tiny spinning whirlpools with each stroke. The trees, as if trying to acknowledge our arrival, crowded the banks so thickly it seemed as if we were paddling down a canyon. And overhead the air was alive with birds. A great blue heron winged majestically past to some hidden roost; a kingfisher dashed low for an unsuspecting fish; and a duck scrambled madly to escape our strange silver craft.

There is something indefinable about canoe camping — an exhilaration, a rhythm and a fierce clean freshness — that takes it out of the realm of other sports. Certainly the Indians felt it as they moved from one hunting area to the next. The French voyageurs felt it as they carried their furs down waterways of the far north. And Ted and I knew it then as we paddled down that quiet canal to Lake Drummond.

It was only two miles, perhaps three, to the campground and we found it deserted. Located on a pleasant grass-covered knoll in the very heart of the swamp, there is room for two dozen tents; running water, electric lights, two boat docks, picnic tables with grills

and a covered group shelter and restrooms are also provided. For this particular camping trip I had brought my small two-man mountain pup tent, and we pitched it beneath a tall maple. We had counted on firewood being either hard to find or non-existent, and we were right. Our five-pound bag of charcoal was just enough for the three-day trip.

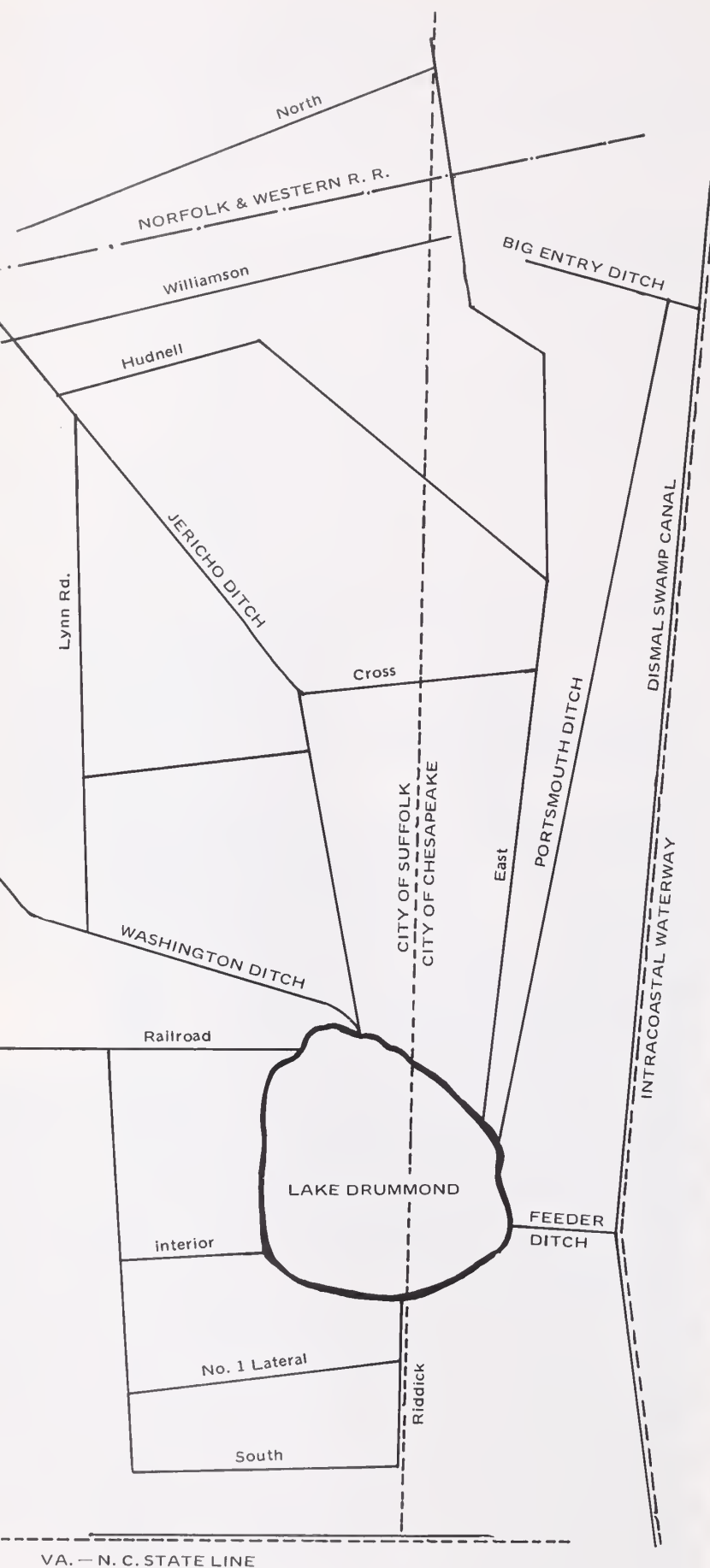
From the campground it was just a short paddle to six-mile long Lake Drummond, strangely enough the highest elevation in the swamp. That afternoon Ted and I found it absolutely still. Nothing moved — even the birds were gone. All about us were the twisted and gnarled trunks of the cypress trees, and far in the distance I could see the long pier with its cabin that belonged to the Lady of the Lake Hunt Club.

We paddled quietly around the trees, pausing now and then as I alternately tried fishing or taking pictures. We were on the lookout for wildlife, too, for more than 75 different species of birds live here, including herons, egrets, ducks and gulls. They were nowhere to be seen, nor were any of the deer, bear, raccoon and bobcats that also call this their home. Fishing was poor, and I did not have the patience just then to keep trying for the pike or perch that are sometimes caught here.

Pike fishing was in full swing when Ted and I returned to the campground, however, for several more visitors had arrived, including two more canoeists. One

Left: Here a young fisherman at Lake Drummond removes the hook from a small chain pickerel he landed. Artificial diving lures proved to be the best. Right: Part of the boat docking facilities at Dismal Swamp.





of them had taken a 12-inch pike on light spinning tackle fishing in the canal beside the campground. It was the first of several caught that weekend in the very same location.

Ted and I turned in early that night, planning to wake early and watch dawn break over the swamp. We were paddling by 5:30 a.m., and we found Lake Drummond again silent and still. Mist rose off the water as a dense fog, and it gave the cypress trees eerie and mysterious forms. Sometimes we saw them beforehand as we paddled close among them, but more often they just seemed to appear suddenly as the fog lifted for a brief moment and then closed in again.

Later that evening we sat around the picnic tables discussing the swamp and its peculiarities, especially its lack of people. During our short stay in the Great Dismal we had found a remote outpost not quite in step with the rest of the world's fast, frantic pace, and we were decidedly reluctant to return to that pace the following day.

"Perhaps families stay away from here because they associate swamps with snakes, alligators and mosquitoes," said one old-timer who had camped and hunted the Great Dismal for the past 47 years. "Well," he said, "the snakes stay back in the marsh away from the camp, the poachers killed any alligators years ago, and mosquitoes just plain don't like this place."

Maybe the mosquitoes don't like it — I know Ted and I encountered surprisingly few during our September trip. But I can sure tell you two canoe campers who do like the Great Dismal, and plan to return one of these days in the not-too-distant future.

Left: Map showing Lake Drummond, indicating feeder ditch. Below: The author rigs his fishing equipment at the campground prior to trying his luck. The campground is shaded, and includes picnic tables and grills. (Photo by Ted Buddine).





All during the growing period the antler is composed of a mass of connective tissue coated by a protective epidermis, or velvet. The velvet is supplied with nerve endings and blood vessels and, therefore, is the means by which nutrients are furnished to the antlers for proper growth.

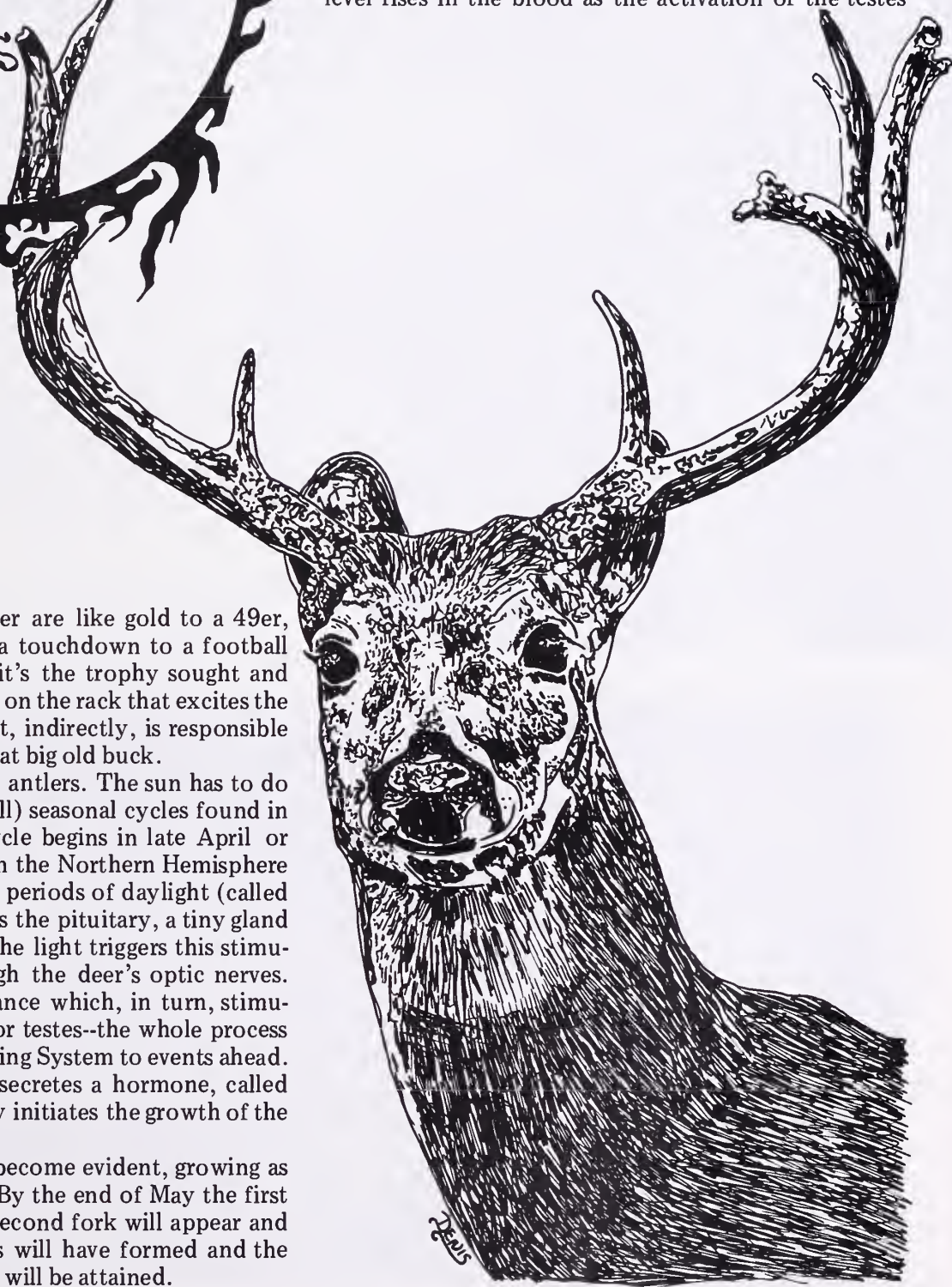
But the antlers undergo a change, beginning in July and ending by the end of August. The antlers calcify, become impregnated with lime. Just prior to the shedding of the velvet in September, the testosterone level rises in the blood as the activation of the testes

By WILLIAM D. WEEKES

Antlers to a deer hunter are like gold to a 49er, nectar to a bee, like a touchdown to a football coach. To the sportsman it's the trophy sought and revered. The sun that shines on the rack that excites the nimrod is the very sun that, indirectly, is responsible for those antlers being on that big old buck.

In a way, the sun grows antlers. The sun has to do with many (if not nearly all) seasonal cycles found in nature. With antlers the cycle begins in late April or early May, when the days in the Northern Hemisphere become longer. Increase in periods of daylight (called photo-periodism) stimulates the pituitary, a tiny gland at the base of the brain. The light triggers this stimulation by streaming through the deer's optic nerves. The gland secretes a substance which, in turn, stimulates the male sex glands, or testes--the whole process being akin to an Early Warning System to events ahead. The activated testes then secretes a hormone, called testosterone, which directly initiates the growth of the antlers.

During May the antlers become evident, growing as much as a half-inch a day. By the end of May the first fork appears. In June the second fork will appear and by July most of the points will have formed and the maximum width and spread will be attained.





increases. This increasing of the hormone level speeds up the antler hardening process, causing blood vessels at the base to constrict. Result: the velvet sheds.

The deer spends October and November shining up his ornaments, making them attractive ivory-like sex symbols. Here we squelch False Notion No. 1: the stain on the antlers does not come from the sap of the trees the buck uses to shine up his points. The dark stain is the bloody residue of the velvet.

January is when most bucks lose their antlers. The base of the antlers become so granulated with lime, that the blood supply from the pedicle (a bony extension of the frontal bone from which the antler is formed) is shut off. Result: the antlers fall off.

Around the check stations one hears, from time to time, antlers referred to as horns. The dictionary classifies the antler as a type of horn, but the difference between the two is notable. Horns found on sheep, goats, cattle and antelope have a core of permanent bone, covered by a sheath of keratin, tough fibrous protein like one finds on some insects. Antlers are confined to members of the deer family: moose, elk, caribou, and white and black mule deer. Antlers are "annuals." Horns have no velvet. Hence, False Notion No. 2 is answered: antlers are not horns.

For "youngsters" the first signs of antler development is at 10 months. False Notion No. 3 would have one believe that the "buttons" on a fawn buck are antlers developing. They are not. They are the antler

(Continued on page 30)

Top left: The velvet that covers a buck's antlers in spring furnishes the nutrients needed for proper antler growth. Left: A white-tailed buck's antlers first become visible during May. Below: During rutting season, a white-tailed buck shines his antlers by rubbing them against trees. (Photos by L. L. Rue).



You Can Go Home Again



By CARSTEN AHRENS

Adam Kirk was in the side yard by the sundial where his friend and neighbor, Rufus Merry, had joined him, but they weren't contemplating the dial.

Adam lighted his pipe for the tenth time, then said, "It would be a dangerous thing to do... even foolhardy to think about. It won't be like it was. The kids would be disappointed, and Agnes would regard her father-in-law as an imposter. Why, I haven't been there in twenty years. It's 500 miles away. You saw the map I drew for the kids in the den..."

"Everyone knows that map. I know it by heart. It's a masterpiece of poster art. Crooked Crick begins at the top of the left, and it twists and turns completely down and across the wall until it disappears under the register on the right. I know just where the bee tree is, the log bridge, the dog-tooth violet bed, the patch of Dutchman's britches. I could take anyone to the wild raspberry thicket, the shagbark hickory grove, the black walnut trees along the lane that leads to the back woods, the yellow transparent apple or the green gage plum trees. Each one of your four grandchildren has shown me your old swimming hole, the smoke house, the swamp and the caves where you trapped minks,

muskrats, and skunks. I know where you plowed for wheat, hoed potatoes, picked spring and fall mushrooms, and wild strawberries. Do I ever know the map?"

"Rufus, you poor chap, how the kids have bored you!"

"About as much as you bored them. You don't realize, Adam, as your grandchildren and I do, that you had a fabulous boyhood. The kids, like me, grew up right here in town. I've never lived anywhere else, except for my college years, but in that house beyond the hedge. It isn't everybody who's had the chance to grow up where there were cows to milk, calves to be taught to drink from a pail, horses to ride, hogs to butcher, cabbages to convert to sauerkraut, hay to cut and dry and haul into the barn. I know which path leads to the crossroad store where you bought coal oil for the lamps, and which path led to the blacksmith shop where your pony was shod."

Adam Kirk went to wash up for supper. He was a bit late and the four grandchildren were in their places waiting for him.

Grace at the table was always sung, a verse from some hymn of thanksgiving and the children were always just a bit amused when Adam added his rumbling bass to the harmony. There was the usual

youthful chatter, perhaps a bit more animated than usual, for the end of the term with the exams was approaching. At the end of the meal their mother said,

"It's Andy's turn to help me with dishes tonight. The rest of you watch TV or practice or study for about half an hour, and then we'll have our weekly business meeting. Grandpa, you're chairman tonight."

The children had grown up with regular family business meetings and took them as a matter of course, like meals, nightly baths, or Sunday school. But Adam was aware of an undercurrent of excitement during the meeting in the den as they discussed such prosaic matters as bus fares, lunch tickets, and school supplies. But everything went smoothly until Adam said:

"Now are there any suggestions for the good of the order?"

"Grandpa Chairman." Adam recognized Arthur.

"We've been talking things over, and now that vacation is coming. . ."

". . . We'd like you to take us back to the farm. . ." continued Mabel.

". . . And dig worms where you dug worms. . .," added Andy.

". . . And fish where the map says there's fish," finished Betty.

"May I ask if you've been talking to Rufus Merry?" asked Adam.

"Oh, yes," agreed Arthur; "lots of times. He thinks it would be good for you too."

"I move that this summer we visit the farm where you grew up," volunteered Arthur.

"I second the motion," said Andy.

For a moment there was silence. Adam dropped the gavel. "Don't you see it won't work? Things will all be changed? The swampland will be drained, the French Canadian trappers and their mysterious cabins will have disappeared. The children of the German farmers will have filling stations and motels where there were truck farms. I wouldn't think. . ."

"Chairman Grandpa, there is a motion before the house," said Agnes.

"You, too," said Adam in amazement. "I give up. You've heard the mo. . ."

Everyone seconded it, and that is how it came about that Adam, Agnes, and the four Kirk children returned last summer to Crooked Crick Country.

When they came within 25 miles of their destination, places began to take on a familiar look, and from that point on Adam began to sound like one in charge of a conducted tour.

Most of his predictions came true. They stayed in a tourist camp where proprietress was the daughter of one of the truck farmers. The attractive cabins were arranged in a neat semicircle upon the black mulch that once produced prodigious crops of onions and celery.

And Crooked Crick? It wasn't even called "crick" anymore, It had become "creek." The adjective

"crooked" had been replaced with the name of a local boy who had performed feats of heroism in the South Pacific during World War II.

Time was when pastures with fine herds of dairy cattle ran down to the water's edge. Now, either the banks were lower or the water was much higher. The pastures on either side of the banks were now filled with bullrushes that stood solemnly, gossiping in the wind.

They dug worms where years before Adam had dug worms. They bought bamboo poles and went fishing where the home-made map said fishing was unexcelled. Nothing seemed annoyed with them but a great blue heron that left the margin of the stream with a dignified but disgusted grunt.

They settled down to fishing. Adam did little but bait hooks, for the younger ones had never seen a hook or a worm before. But soon Adam was the only one fishing. There were too many wonderful things going on. A muskrat was busy harvesting, washing, and storing bulbs. As it advanced through the water, it was the apex of a giant V that lengthened as the rodent swam. Whirligig beetles made polka-dotted patterns on the almost motionless water. Where the current was clear, the water striders made fantastic shadows on the sandy bottom. Small dragonflies, that Adam used to call "amber-wings," fought for possession of the bobbars. Now and then a kingfisher went kutch-akutch-akutch along the way to spear some unfortunate fish. Turtles crawled up on exposed spots of nearly submerged logs to sun themselves. Red-winged blackbirds, splendid in their epaulets, marsh wrens, a black duck, coots, and woodcocks investigated the anglers and then went on about their various businesses.

Two weeks later, Adam was in the side yard by the sundial talking with Rufus. He was saying:

"Strictly speaking, when one has four grandchildren, they don't go on a vacation; they have an extended picnic. Whatever this was, it was eminently successful. Often we didn't fish. Fishing was just an excuse to get out the map and go exploring. We returned to town absolutely sure that our first vacation was the best anyone could have taken.

"It worked a little too well. Arthur wasn't sure there was much sense in returning to a crowded city when one could live along Crooked Crick where the air was pure and the water tasted like water, where there wasn't traffic or noise, and where everyone called everyone by first names. But we hope to civilize him again."

"Seriously though, Rufus, I'm glad you and the kids got me to go home again. More folks should try it. They might find when they return to the haunts of their barefoot days, that their cricks are as unspoiled as mine."

Late Season Gobbler



Photo by L. L. Rue

By STEVE RHODES

I was wet up to my thighs from wading in the clear icy brook. In the manner of a beaver, I squirmed on my belly up the muddy red creekbank and cautiously peeked my head above the bank's edge. Camouflaged from head to toe, only the top of my face net showed. My eyes peered through the grass in front and then scanned the oak and poplar-studded bluff 70 yards ahead. A movement registered. Quickly my eyes made out the shape of a large monarch gobbler partly hidden on the top of the bluff. Even as I first saw him the gobbler started stepping toward us on a course angling down the bluff. When the old bird reached an opening directly in front and above me at sixty-some paces he halted and appeared frozen in an alert pose.

Almost imperceptively I noticed his head cock first one way then another as the wary old bird concentrated his keen vision in my direction. Despite my camouflaged head I felt exposed. . . I held my breath. If my hunting instincts were right, the large gobbler before me would, in a few seconds, decide to fly off the bluff and over the creek to the woods behind me. My whole body tensed, fingers gripping the shotgun fiercely as I crouched there waiting for the long-bearded trophy to fly over me.

The 1975 spring gobbler season was quickly coming to a close, as it was now Wednesday morning of the last week. My tags were yet untorn and my misses were running unusually out of hand. I had called up and missed four different gobblers. To a fellow with a dozen long beards on the wall, that record is tough to explain to the local boys. My confidence was shaken. To console myself, I admitted that the gobblers I had hunted were especially wary ones and all probably had shot in their bodies from previous seasons.

One morning in the last week of April I was surprised to hear not one, not two, but three gobblers on one eastern slope. One of the birds was very deep-toned and gobbled only intermittently. . . indicating probably a wise old tom skilled in the ways of the hunter. He no doubt thought highly of his feathers. More carefully, I noted that when he talked the other two would shut right up. . . which indicated that the old boy was definitely at the top of the pecking order. I went right after him.

Sneaking quietly up behind a large white oak I crouched and listened for the old tom to sound off directly below me on the mountainside. Sure enough, amid the chorus of bluejays, crows, woodpeckers and drumming grouse, suddenly boomed an ear-splitting gobble. I immediately answered with the hen-bone yelper. A rise separated me from his sight but I heard the flapping when he sailed off his roost. . . and also discerned the sound of him landing in the forest somewhere below, just out of sight. He had heard and was coming.

The sun was just breaking when I finally saw him standing in some ivory bushes 60 yards away. He would not gobble and I had only chanced six or eight yelps. In the distance I could hear the other two younger birds still on their roost, but all my attention was riveted on the black bulk in the bushes below.

He would have to be closer before I could take him. Minutes passed like hours and I became convinced he would come no closer. He had my yelps pinpointed and was standing there waiting for the hen to show herself and come to him. As time passed and no hen showed, the wise old tom became alarmed and I watched him fade slowly out of sight. I swore under my breath and headed out of the woods determined to have another try some other morning.

A week later I was after him again, and it was a fine bright spring morning. The trees were leafing out and all the woods had a light green haze to them. The old tom this particular morning was on top of a bluff sounding off in rapid gobbles, and I approached quickly to 150 yards and made my call. Immediately the bird shut up and next time I heard him he was two ridges over, gobbling like nothing had ever happened. I realized with respect that the wise bird had recognized my call from our previous encounter and had flown off the bluff to a ridge in the distance. I tried to call again after another approach but succeeded only in spooking him further away. I have confidence in that bone yelper, since I've called up many gobblers with it, but this super sharp tom recognized the sound of it for what it really was!

Finally, the time came to Wednesday of the last week. The forest was in full of spring, and the scent of freshness was intoxicating.

Not long after first light I heard the old gobbler proclaim the dawn and I took off straight at him. This time it was no surprise to me when the gobbler shut up after I'd made my call. I waited till I heard him sail off the roost and heard him "hit" the forest floor. His short gobble then told me he was walking away from me toward the top of the bluff overlooking the creek.

Then, because I knew the terrain and realized calling was useless, I quickly decided to sneak down to the creek, wade it to a point below the bluff and hope to ambush the gobbler when it flew. But time was short. I had to get to my ambush point before the gobbler

reached the top of the bluff where he would be able to spot me moving.

As mentioned earlier the gobbler was just topping the bluff when I peeked above the creekbank.

In the morning sunlight his colors were brilliant green, purple and black with a light blue head capped with white. His long beard touched the leaves as he moved down the bluff. The bubbling of the creek muffled out his footsteps but I saw and heard his gobble as he simultaneously stretched his head and fluffed his feathers. It was a sight.

Then after another reassuring glance, the gobbler launched upward into the air, his big wing span breaking off poplar twigs as he rose out from the limbs. In seconds he was sailing straight for the ridge behind me.

As I rose in seeming slow-motion, the great gobbler saw his mistake and veered to my left. It was a moment frozen in my memory forever. At my shot the gobbler lost control and plunged downward smacking the water only yards from me. Spray mists sparkled in the sunlight from the great impact, and small feathers were still twirling in his downward path. The head-shot gobbler flapped wildly in circles in the rocky streambed, throwing spray on me as I closed in to grab him. It was a moment of supreme triumph and heartfelt thanks. Shortly thereafter, sitting on the grassy bankside with my prize trophy, I thanked all heaven for the opportunity of the hunt and prayed that forever wild gobblers will roam the ridges and boom their call back and forth. . . till hell freezes over.

"But I saw and heard his gobble as he simultaneously stretched his head and fluffed his feathers. It was a sight."

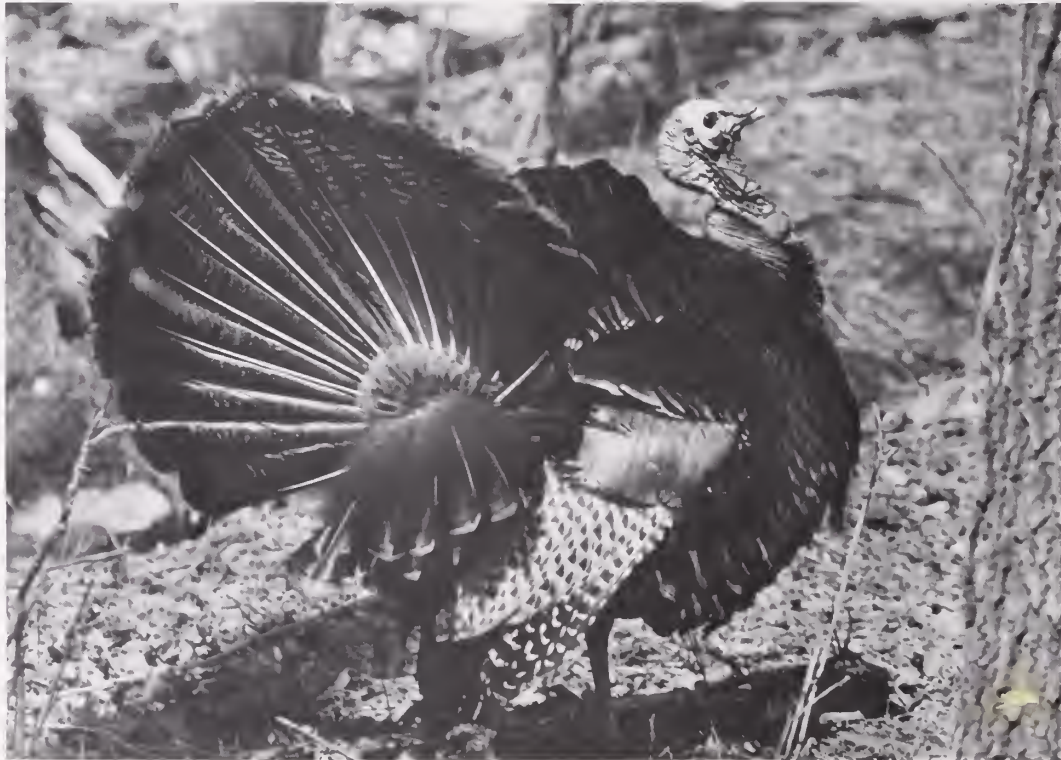


Photo by L. L. Rue

ORANGE CO. LAKE



By BOB GOOCH

Just home from a so-so fishing trip to Canada, I was scanning the local newspaper when I came across the story. It hit me right between the eyes — hard.

The catchy picture which accompanied the story was one of a happy fisherman holding a stringer of potbellied largemouth bass, catfish and citation-size northern pike. Why, I had fished an entire week in a well-known Canadian lake and my total catch was not nearly as spectacular! Even the bass was a 6-pounder, and one of the catfish was in the same class with the bass and pike.

Those fish came from a public fishing lake less than 40 miles from my Fluvanna County home.

I did a bit of sleuthing, found the successful angler's place of employment, and dialed his number.

His trip had been even more successful than the news story had indicated. In addition to the fish already described, he had landed a smaller 3½-pound largemouth bass and five smaller pike. Even so all of the pike except one had exceeded the 26-inch minimum size

limit, but the daily creel limit is two. Except for the two citation size fish all of the northern had been returned to the water.

Armed with some new angling tips from the friendly fisherman and my hopes boosted by his story of success, I headed for Orange County Lake, the hot fishing hole that had given up the prizes. Joining me on the balmy July day were my brother Jack and his two sons Steve and Johnny.

We had two boats, a 17-foot aluminum canoe and a 12-foot cartopper which we slid into Jack's pickup truck. The canoe rode the roof of my Scout. We also took along a small electric motor for the cartopper. Paddles and strong backs would have to handle the unregistered canoe.

Our plans were to run to the head of the lake and let the light breeze move us slowly back. We would drift fish with live minnows, the bait used so successfully by the angler discussed earlier.

A small creek near our homes furnished us with a good supply of small minnows, and we complimented them with some larger ones from a bait store near the lake. I also added a dozen night crawlers, hoping to catch a few bluegills with them.

Orange County Lake, constructed, owned and operated by the Commission of Game and Inland Fisheries, was opened to fishing on July 2, 1966. The 124-acre lake had been stocked with largemouth bass, bluegills, redear sunfish, channel catfish and northern pike the year before.

Facilities include a 50-foot public right-of-way strip that rings the lake, a graveled access road, a sizeable parking lot, and a good boat launching ramp. The concession which operated for a number of years, providing anglers with rental boats, motors and batteries, fishing tackle and coffee, has been closed for about a year. Rental boats are no longer available.

The popular lake is located east of the pleasant little city of Orange, and is reached via Virginia Primary Route 20 and secondary Route 629. Attractive signs on both roads guide the angler to the lake.

Following its opening to the fishing public the lake soon developed a reputation as one of the best pike lakes in the Old Dominion. The northern pike, a close relative to our native chain pickerel, is common in the northern states and Canada, but is not native to Virginia and other southern states. Reared in hatcheries and released in suitable waters, it has fared well in parts of Virginia, however. Orange County Lake is one in which the effort has proved successful.

R. H. Weakley who lives on the shores of the lake, and for a number of years operated the concession, fishes the lake often and finds the pike cooperative. His fine catches include a 15-pound, 2-ounce lunker taken there on March 7, 1972. Many other good fish in the 6 to 7-pound class have come out of the lake in recent years.

The channel cats have done well also, and the clear waters of the Piedmont Region lake have given up some good ones.

During the first six years of the life of the lake the fishing was tops. The bluegill fishing was good and the crappie were abundant though small. The largemouth bass fishing was excellent and other species offered variety.

The consistently good fishing began to slack off in 1972, however, and was noticeably poor by early 1973. As is common to such lakes the heavy harvest of catfish, bass and pike drastically reduced the predatory species and the pan fish populations mushroomed. Stunted fish was the consequence.

To correct the situation biologists of the Commission of Game and Inland Fisheries treated the lake with antimycin in February of 1974. The fishing improved considerably after that.

Launching our two light boats at the excellent ramp was a joy. Tackle, life preservers, motor and battery and bait were quickly aboard. Johnny and I boarded the cartopper, leaving the canoe for our two partners. I tossed a tow rope to Steve in the bow of the canoe and flipped the switch on the electric motor. Since the launching area is approximately midway of the lake, the run to its headwaters didn't consume much time.

We had the lake to ourselves. "One of the advantages of fishing a weekday," I commented to Johnny.

A light wind was blowing out of the northeast so we developed a pattern of drifting diagonally across the lake from the northern shore to the southern one, and then running back across the lake for another drift. This way we covered the water thoroughly.

"Set your float so your minnow will be about 3 feet deep," I told Johnny, "and clamp a split shot about 6 inches above your hook so the minnow will stay down."

Minnows tend to seek the surface, and if not weighted will swim just beneath or on the surface — well above the feeding range of the fish.

"Got one," Steve called from the canoe. We turned and watched him swing a small fish aboard. "Crappie," he advised.

Johnny and I completed our first drift without action. But as we neared the shore the boat drifted into a small cove. I dropped my still lively minnow back into the pail and strung half a night crawler on the small hook. It had hardly hit the water when the tiny float quivered a couple of times and disappeared. I set the hook and was soon stringing a fat bluegill.

Encouraged by my success, Johnny followed suit and we took several more bluegills before the action stopped.

"Bluegills are always good to kick off a trip," I thought.

We reeled in, I flipped the motor switch and we were across the lake again in a jiffy.

The breeze caught us up and we were again drifting toward the southern shore — our minnow-rigged hooks and floats trailing about 20 feet behind the boat.

Our eyes were glued to the dancing red and white bobbers. Suddenly mine disappeared!

I waited — until I could stand the suspense no longer. Taking up as much slack as possible without alarming the fish, I set the hook sharply. I got resistance immediately, but it was not a heavy fish. Within minutes I was adding a fat crappie to the stringer.

Midway across the lake we met Jack and Steve headed in the opposite direction. They had also taken some good crappie, and Jack had scored with a fine 2-pound catfish.

Our zigzag trip down the lake consumed most of the morning, but by the time we went ashore for lunch near the launching area we had accumulated good stringers of bluegills and crappie. Jack's nice channel cat topped our catch.

On the green grass near the launching ramp, lunch was a treat — equally as good as one of the famous shore lunches I had enjoyed in Canada the week before.

We had saved the lower half of the lake for the afternoon, but the air was still when we resumed fishing. The boat would not move as fast as it had during the morning.

As Johnny and I worked our way toward the dam we noticed that Jack and Steve were spending a lot of time in a tree-filled cove near a wooded shoreline. For some reason the hardwood trees which covered much of the area now inundated by the lake had not been cut here. Stark and gray, they marked the watery graves of a once rich stand of hardwoods. Had the wind been blowing they would have presented a hazard.

We eventually reached the dam and fished there for a while, using minnows and worms and occasionally small spinning lures. By now we had all of the pan fish we wanted, but couldn't seem to interest the big bass and pike the lake is noted for.

We decided to move up the southern shoreline and check on our partners' success.

Their stringer was heavy and they had added another fine channel cat, almost a duplicate of the first. An even larger fish had snapped Jack's 6-pound test line. "Probably a big cat," he said.

Back at the launching area we met a biologist checking creels. According to his scales our combined catch totaled 7 pounds, 4 ounces of catfish and 3 pounds of bluegills and crappies.

The bass and pike had evaded us this time, but those bluegills, catfish and crappie, filleted and fried to a golden brown, would be delicious.

We loaded our boats and headed home, satisfied with our catch, and intrigued by the possibility that the fish that broke Jack's line might be a giant northern pike — still there to be caught.



Plain Old Watershed Management

By ROBERT H. GILES, JR.

The outdoorsman, in the course of his hunting, hiking, camps and fishing trips has the opportunity to see much of the state's magnificent water resource. One of the deepest and most gratifying of all pleasures is the sight of water cascading from a tiny spring, or moving slowly, gleaming violet in the setting sun. Knowledge and understanding must accompany appreciation if the water resource is to remain clean, pure and beneficial. The management and conservation of Virginia's water resource cannot be left to "somebody else." The sportsman, farmer, and field worker are in a position to observe, understand and act for the conservation of this basic resource.

A watershed is a trough-shaped piece of land in which the water from rain and snow drains in a single channel. A little thought immediately discloses that every unit of land is part of a watershed. A significant forceful fact impressing conser-

vationists is that a total, sound program of watershed management would reach the national and ultimately world goals of conservation. Even the oceans are included, for they receive the results of wise watershed management.

The objective of the management of watersheds is to achieve flood control, maximum yields of high-quality water, minimum sedimentation, and ample ground water recharge.

An apparent solution to the problem of sound watershed management is to return all land to its original virgin condition. Though this technique would undoubtedly obtain the best natural control of water, it is neither desirable nor practical. Two basic conflicts appear in the decision for use of water. Some areas need more water, therefore, land managers encourage runoff and discourage any water being withheld on the land. On the other hand, in areas of high rainfall, there is flood danger, so the retention of water on the land is encouraged.

Under the first situation, vegetation is removed from the land to cut down on evaporation and plant transpiration. Under the second situation plants and trees are planted to intercept the water and either hold it or turn it back to the atmosphere. Because of the limitations under which the watershed manager must work, it is of utmost importance that a coordinated approach be maintained, relating each shed to the total, each to the State, thus to the Nation.

Every day 4,300 billion gallons of water are released over the U. S. through precipitation. What happens to this water? Between 10 and 40 percent of it is intercepted or caught by plants. In a forest the rest disappears into the soil and then reappears later as a spring or seeps down slopes. In other areas the amount not stored in the soil runs down the slope as surface runoff. Much water that is caught by plants and that falls on the ground surface evaporates. This can amount to 35 to 50 percent of the annual precipi-

tation. Since hardwoods hold less water than pines and hemlocks, water losses through evaporation can be reduced by encouraging hardwoods. Other factors affecting soil and dryness are dead vegetation, root depth, and root development.

Man has only limited ability to control rainfall, but he can control its runoff and infiltration. Runoff occurs as lateral movement through solid pore spaces and also across the surface in agricultural and urban areas. About 12 percent of rainfall is moved downslope within the surface foot of soil. The watershed manager's major job is to reduce or slow surface runoff. Forests take care of the problem handily. Pore spaces within the soil act as temporary storage and increase the period during which water can percolate into underlying soil and rock layers. Small storage spaces provide for plant needs; large temporary ones contribute to replenishing ground water supplies. The rates of infiltration of water into soil are determined by soil character and root systems, not the overhead plants. Coarse textured soil with a complete layer of plant litter protects the soil from the impact of rain and rarely has clogged soil pores. These soils, with abundant insects and small mammals, get good water infiltration. On bare areas rainfall compacts the surface, forms a tight covering and decreases infiltration. Fire, grazing, logging, freezing and man-use disturbs the soil, decreases infiltration and increases runoff.

Plant roots provide the primary avenues of water movement and temporary storage in relatively impermeable soils. Roots are a two-way street for they also "empty" the soil of water and provide storage for the next rain. Deep roots provide this function best, though grasses have the advantage of keeping soil in place, making it receptive to water, and using all available water in the root region.

Besides providing water channels, plant roots bind the land surface to the bedrock, prevent "slumps" and



Proper management and control of watersheds results in such pleasurable recreation spots as this one on Clinch Mountain.

mud slides, and anchor the surface soil against scouring. Plants lower ground temperatures and wind velocity thereby reducing evaporation and slowing snow melt. Wildlife food and cover plants provide these functions as well as achieve their role for wildlife.

Besides the many other advantages of plant cover on the land, plant decay, especially in forests, produces antifreeze-like substances which

discourage soil freezing. Almost all of the rain falling on frozen soils runs off to streams and may cause flooding.

Floods and erosion are quite natural and occurred long before man. They still occur in wilderness areas. The flood problem is (1) to avoid exceeding the natural rates of flooding and erosion, and (2) keeping people from being surprised or damaged when these natural



events occur. To attack floods at the headwaters is a sound strategy. The manager's job is to increase the ability of soil to soak up water, and thereby control subsurface runoff in order to reduce damage. This is done by (1) restoring cover to protect the land against compaction and erosion and to increase the intake and storage of water; (2) stabilizing gullies, waterways, and tributary stream channels; and (3) increasing storage

capacities of soil by encouraging plants that transpire abundantly.

A watershed program cannot alone prevent floods. The total watershed program includes a focus on preventing or reducing damage and improving the quality of life for the residents of a watershed. This includes (1) a program of watershed and waterway treatment; (2) watershed improvements; (3) reservoirs and other engineering works; (4)

repair of past damage; (5) removal of susceptible facilities or functions from flood plains and (6) flood plain insurance.

Floods do occur even on well-protected watersheds. It has become clear in some areas that it is cheaper and ecologically far better to move the people from flood plains likely to be damaged than to build an expensive dam. There remains a crying need for upstream control to replace tax-sucking downstream controls that are short-lived due to silt deposits.

Erosion has a three-fold damaging effect. Not only does it reduce or destroy land value where soil is removed, but it acts as liquid sandpaper, scouring gullies and streams at an increasing rate. It also destroys crops and productive soil where it is deposited. Washed and blown soil covers crops, frequently covers rich with poor soil, clogs streams, fills reservoirs, and destroys fishing and recreational values.

Some symptoms of land illness are: (1) the removal of vegetation on easily-eroded slopes; (2) formation of rills and washed places; (3) build-up of small piles of leaves and debris; (4) severe sheet and gully erosion; (5) deposits of silt in stream; (6) stream channel cutting; (7) high water marks and debris in stream-side brush; and (8) muddy water. On cutover forests, symptoms appear as (1) erosion; (2) flash, siltladen floods; (3) deterioration of the soil quality; (4) reduction in soil water storage and infiltration; and (5) lower summer flow of streams and dried up springs.

The treatments to be prescribed are: (1) aid natural plants to become established; (2) protect the land from fire; (3) regulate grazing and protect the land from over-grazing; (4) fence against livestock; (5) when required, curtail all use; (6) plant and seed areas; and (7) use control measures like contour trenches, gully plugs, and retaining walls. This last is the most costly, but a primary consideration in getting vegetation to cover land scars.



Susannah E. Feldman

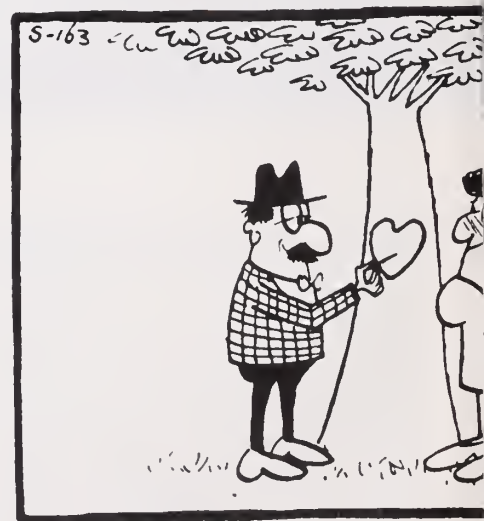
Look Beyond The Path

By SUSANNAH E. FELDMAN

Traverse the forest path, but look beyond it into the green depths, where the wild treasures of the soil grow. Some are shy, some inquisitive, and the bold ones completely disregard the intrusion, as one pads quietly along a petalsoft path. Fragrance of wisteria, honeysuckle, and locust mingle to make nature's special potpourri. Clusters of jack-in-the-pulpit survey a congregation of yellow and scarlet columbine from under their drooping spathes. The white Virginia rose, dainty as a lace bridal veil, holds court behind a fortress of poison ivy and fears not the intruder. Plantain grows strong and tall, awaiting the child who will pick the spear-headed stem, then twist it into a slingshot and fire it. The pretty umbels of the mayapples tremble as one passes, and trailers of foxgrape grope in the

vacant air spaces seeking a solid substance to entwine. A great oak stands guard, splendid in grandeur and clean of parasitic growth — on such strength the enemy dare not trespass. Blooms of the tulip tree fall into a bossy stream and ride the narrow course to deep dark areas that sunbeams seldom bless. Robins walk the cleared spaces, their every deliberate movement a study in precise decorum, as they crisscross from shadow to sunspot, like pawns on nature's chessboard. A giant of the forest lies smitten, the victim of the elements on a dark and angry night; it now reposes, decorated with rows of red and yellow fungi like a huge rustic abacus. Suddenly a merging of green and swamp — the fermentation bowl of earth's wine; on this dark pungent fluid, water spiders streak and fingers of moss stretch like strings of

emeralds on a black velvet gown. Fern fronds resembling antennas sway above the dark acrid sponge. Abruptly, path and river meet in a serration of earth and water, and in the quiet shallows of the inner roads fat little fish wriggle and await a high tide that will carry them out to the main deep stream.



Kaleidoscope

HE STILL GETS HIS DEER. Mr. Kenneth W. Maupin of Crozet, Virginia wrote Virginia Wildlife to express his thanks for R22-13 which permits the special kind of hunting necessary for the disabled to enjoy their sport. Mr. Maupin, who was injured in an accident on his farm two years ago says, "Prior to my accident, I enjoyed hunting and it really meant a lot to me to be able to participate in this sport again this year."



Best Dam Newspaper

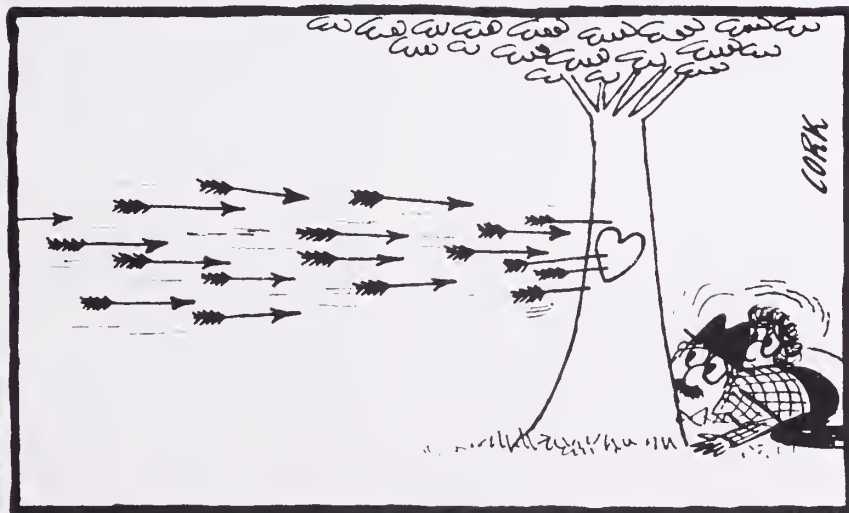
The John W. Flannagan Reservoir, a U. S. Army Corps of Engineers Flood Control Dam high in the Cumberland Mountains of Virginia's Dickenson County, is extremely popular among anglers in the western part of the state as well as those from nearby Kentucky, Tennessee, and West Virginia.

Largemouth bass, crappie, bluegills and big catfish are the major species, but there is also good fishing for rainbow trout, smallmouth bass, walleyes and white bass. And the Pound River, a major feeder stream, offers good put-and-take trout fishing.

Joe L. Baker, editor and publisher of *The Cumberland Times* and an ardent angler and squirrel hunter, gives the popular lake good coverage in his weekly newspaper published in Clintwood, the county seat. Lucky anglers take their catches to Baker for photographing and publishing in the newspaper, and up-to-date fishing conditions are reported weekly throughout the long fishing season.

The slogan of the newspaper, which appears in bold print on the first page, is always worth a chuckle. It reads, "The Best Paper Printed in Dickenson by a Dam Site."

—Bob Gooch



On The Waterfront

Edited by Jim Kerrick

Safety Tips For Boaters

WEATHER

The best thing for a boatman to do in case of bad weather is to stay in port. However, here's what to do if you are caught out on the water by bad weather.

Head for the nearest sheltered shore. If the weather is very choppy, seat your passengers on the lowest part of the vessel keeping them as close to the centerline as possible and head into the waves at a reduced speed.

Should your motor fail or if the sea is so strong you cannot make headway attach a sea anchor from the bow to keep the boat headed into the wind. A bucket or a pair of pants with the legs tied together attached to a line will do the job in an emergency.

Keep calm. Panic spreads easily and a well found small boat is capable of surviving nicely in bad weather if handled calmly and correctly.

AN OUNCE OF PREVENTION

If someone tries to sell you a "maintenance free" boat they should be jailed or at least run out of town on a rail.

Like the time machine the maintenance free boat has not been invented. However, maintenance on today's boats is not the drudgery it was twenty years ago. These few in season maintenance steps will save you time and money.

(1) Hose down the boat hull with fresh water every time you pull it out. You will be preventing a build up of grime and in the case of the hardware, forestalling corrosion.

(2) Inspect the engine carefully and check the propeller for possible damage. Check the prop shaft to make sure you don't have a hunk of monofilament fishing line wrapped around it. If you don't plan to run your outboard motor for a month or so, disconnect the fuel line and run

the engine until all the gas is burned out of the carburetor. This prevents gum from forming.

(3) When you get the boat home and unhitch the trailer use a jack stand or whatever to raise the bow slightly so that the rainwater will drain out through the transom.

(4) Top off your fuel tanks after an outing to prevent condensation of moisture in the tank.

(5) Remove your propeller and grease the shaft frequently. Frozen props are next to impossible to remove. And while you have the grease out slap some on the other moving parts of your boat, like the control cable linkages and tilt brackets.

(6) An occasional coat of paste wax, the automotive variety is fine, will help keep your fiberglass hull from chalking. It won't do a bit of harm to a painted aluminum hull either.

(7) Keep a spray can of de-moisturant on board. A "shoosh" here and there will help keep the deck hardware and other metal parts free of corrosion.

There are many other pre-season, mid-season and end of season steps that you can take that will save you back aches and headaches, but we feel that if you take these few steps you will have safe and pleasureable boating trips.

SPRING CHECKUP

Remove, inspect, clean and properly re-gap the spark plugs. Replace defective plugs with those recommended by the owner's manual. Properly operating spark plugs are a basic key to good engine performance. Spark plugs should be cleaned with a wire brush or in a solvent. Never sand blast. When the motor was put in storage last winter the gearcase should have been drained and refilled with the recom-

mended lubricant. If it was not done then, do it now.

On electric start outboards make sure the battery is fully charged. Clean the terminals of dirt and corrosion. Do the same thing to the battery cable connections. It is also a good idea to coat the cable connections with a light coating of grease to help prevent corrosion.

Check the propeller. If the blades are bent the slightest bit, straighten them out. If the prop is too worn, replace it. Propellers are relatively inexpensive, but very important. A single "ding" or bend in just one of the blades can greatly reduce the motor's performance.

After the boat is in the water check the motor's operation at dock-side. Look particularly at the water pump and thermostat cooling systems to be sure they are operating at peak efficiency.

FUELING

Observation of a few simple safety rules is essential to safe fueling of pleasure craft.

First and most important of all, put out all cigarettes, cigars and pipes while fueling along with all other flames and shut off spark producing machinery. Have a charged fire extinguisher handy. Keep the nozzle or fill can in contact with the tank to prevent static spark. Avoid spilled fuel and don't try to fill the tank to the brim.

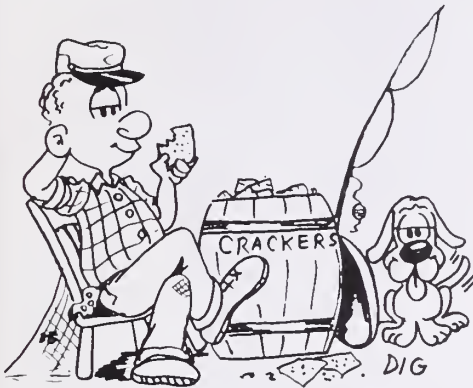
Aboard outboards with removable tanks, take the tanks out of the boat and fill them on the dock.

On vessels of closed construction with permanent tanks be sure to close all hatches and ports while fueling. Then open the hatches and ports for ventilation and run the bilge blower for at least five minutes. You then give the sniff test and if you should detect the odor of gasoline do not start the engine under any circumstances.

IT APPEARS TO ME...

A Conglomeration of Comments, Cumshaw and Cogitation

BY CURLY



... A PERSON OUGHT TO HAVE ONE!

I guess most of us have experienced, or know someone that has, the tragic result when a bird attempts to fly through a window. With just that sort of situation in mind the folks down at the U. S. Fish and Wildlife Service in 'Puzzleville on the Potomac' have come up with a jim dandy idea. Those fellers have designed a pamphlet full of ideas to prevent birds from flying through windows and gimmicks to scare them away from undesirable roosting places. And the publication contains a near life-size silhouette of a Falcon. The idea is to cut out the bird and stick it to your window thereby creating a situation which will cause migrating birds to avoid the window crash caper. For your free copy write to TRICKS TO CONTROL BIRDS, Department of The Interior, U. S. Fish and Wildlife Service, Washington, D. C. 20240.

To our Senior Citizen friends I want to pass along some information about a free publication which speaks to the subject of the changes that a person's eyes under-go during the passage of time. If you are interested write to the American Optometric Association, 7000 Chippewa Street, St. Louis, Missouri 63119. Oh, before I forget, you

should send along a self-addressed (stamped) envelope but other than that it is free and just ask them to send you their booklet about changing eyesight.

The National Water Data Exchange (NAWDEX) has been organized to help the public and government agencies in identifying, locating and acquiring data on water. For more information contact NAWDEX, USGS, 421 National Center, Reston, Virginia 22092 or by phone at 704/860-6031.

... For Your Book Shelf

When I was a boy the name, Ernest Thompson Seton, conjured up visions like few other authors could or did. Now, more than a few years later, I get the same spine-tingling sensation when I read the stories written by this outdoorsman-naturalist who weaves magic with his words and art. These thrills have come to life again in the form of a recently published book entitled "The Worlds of Ernest Thompson Seton."

Edited by John G. Sampson, this magnificently done publication contains over 50 paintings (36 of which are in full color) which have been carefully selected from the more than 8000 Seton did during his lifetime. The art work, combined with his as always exciting stories and the special section on Indians & Woodcraft make the \$25.00 price tag well worth it. Printed in Italy the book is available from Alfred A. Knopf, Inc. 201 East 50th Street, New York, New York 10022

As for me, no one time of the year is my favorite. . . I love every season and they all have their own special kind of beauty and charm. I reckon

that is one of the reasons that Majorie Holmes' latest book, *Beauty In Your Own Backyard* has such appeal for me. This prolific and very perceptive author has lovingly compiled a sort of seasonal sonnet which is a joy to read and behold. The 127 page hard-back is divided by season in a manner which enables the reader to select his or her special 'mood,' if you will. Liberally sprinkled with exquisite photographs by Elizabeth P. Welsh, *Beauty in Your Backyard* will make your heart sing. . . no matter what season you favor. Offered by EPM Publications, Inc. 10003 Turkey Run Road, McLean, Virginia 22101 the book sells for \$12.95.

With the growing interest in alternate sources of energy, especially SOLAR, it might just be of interest. . . and practical to learn where to go for information. Well sir, the Government Printing Office in Washington, D. C. 20402 lists at least three on just that subject. The titles, reference numbers and costs are as follows: An Inexpensive Economical Solar Heating System For Homes (N A S 1.15 : X - 3 2 9 4 , S / N 033-000-00632-2 (\$1.15); Solar Dwelling Design Concepts HH 1.2:So 4/3, S/N 023-000-0034-1 (\$2.30); Converting Solar Energy Into Electricity: A Major Breakthrough? Y4.G74/4:So4 S/N 052-070-03525-1 (\$1.10).

... And Then

There is a phone number that you can call to find out just what kind of things are happening or scheduled to happen in the sky (heavens above!) DIAL-A-PHENOMENON is available at Area Code 202/737-8855. Call the number to learn about everything from comets to eclipses.

Personalities

Edited by F. N. Satterlee



Sergeant Fred W. Hottle and Officer Robert W. Inskeep

Fred Hottle, or Bud as he is known mostly, was raised on Stoney Creek near Edinburg in Shenandoah County, Virginia. As a youngster he learned early-on about the joys of fishing and he and his father spent countless hours enjoying the outdoors. During his high school years a tuition was required and, what with the hard times, Bud helped to pay those expenses by trapping. He joined the Civilian Conservation Corps after graduation and spent two years with that organization. After a variety of other jobs he joined the Game Commission in 1949. For some 13 years he was a member of a mobile team which operated throughout the state. When that concept was abandoned he was assigned to Shenandoah County. Bud likes the outdoor life that a warden lives and he enjoys the challenge and reward that come from working to protect wildlife and the environment. His wife is the former Alma Lloyd from Forrestville, and the couple live in Edinburg, about 500 yards from the place of his birth.

Culpeper, Virginia was Robert W. Inskeep's birthplace. His father was a Master Printer and for 37 years was Editor of the "Virginia Star" a weekly newspaper in that locality. "Skip" spent his growing up years in the outdoors as much as possible, but his chores involved helping out in the print shop of the paper. He enlisted in the U. S. Marine Corps after graduating from high school and spent 14 months in Korea during the bitter fighting in 1952. Following his discharge from the USMC he returned to the printing business but his heart was really in the outdoors. Answering an ad in 1962 about being a Game Warden he applied, was accepted and was assigned to duty in Page County, Virginia. He likes the independence that the job offers and that facet, coupled with the outdoor work and association with sportsminded people and wildlife, is a perfect combination for him. Skip is married to the former Naomi Judd who is originally from Luray, Virginia which is where the Inskeeps make their home.

Growing Up Outdoors

Edited by Gail Hackman

Home Grown Worms

"Brenda, what are you doing with all that dirt in that aquarium?" Steve asked. "You'll never have a good terrarium that way."

"Well, smarty, I'm not even making a terrarium," answered Brenda, tossing her head. "I'm cultivating a worm farm."

"Cultivating a worm what?"

"A worm farm. I talked it over with Grandpa Hooty the other day, and he said that if I wanted worms for bluegill fishing all year around, I should cultivate a worm farm."

"Oh, Brenda, you're making that up. I don't see any worms in there."

Brenda looked at her older brother and said, "That's probably because I haven't put any worms in there yet. Grandpa Hooty told me exactly how to do this step by step."

"Why don't you tell me too?" asked Steve.

"Okay. First, I got this aquarium that was out in the garage and filled it about half full of plain old dirt. Then I got some peat moss from Mom, along with some of her compost material, and fertilizer she is going to use on the garden this year."

"What's this compost stuff?" asked Steve.

"Well, it's a mixture of leaves, and grass and leftover vegetables and stuff from the kitchen that Mom buries in the ground at the back of the garden patch each summer. It lays there all winter and in the spring she puts it on the garden to make the soil richer. Don't you go thinking I'm dumb, Steve, just because I'm

two years younger than you." Brenda turned back to mixing the soil in the aquarium.

"What are you putting in now?"

"Well, worms have to eat something, so I'm putting in some chicken mash for food."

"Great idea, Brenda," snickered Steve.

"Quit laughing, Steve. This is what Grandpa Hooty told me to do. Now, if you want to help, why don't you take this can and come with me. I'm going to look for some good worms."

The two began overturning large stones in the yard, and soon had some nice fat worms to put in the aquarium. Back they went to officially open the worm farm for business.

"Hey, Brenda," Steve said, after they had put the worms in their new home. "Are you going to leave this 'worm farm' sitting here in the corner of the yard like this?"

"Oh, Steve, you guys don't know anything," sighed Brenda. "I had Dad drill some holes in the bottom of the aquarium and cover them with wire mesh, so I can leave it here. Then the soil can receive more minerals and water and stuff from the ground. Plus Grandpa Hooty said that it should be in a shaded spot so that the soil and worms don't dry up."

"Well, I was only asking," answered Steve, looking at his sister with new respect.

"Anyway, Grandpa Hooty says that worms can have babies within two or three weeks. Plus, when a worm has little worms, they have up to 20 at a time. So, I guess we'll have some fine worms for fishing in a couple of weeks."

Brenda stood up, dusting her hands, and looked proudly at her accomplishment. "Come on Steve, I'm hungry. I just hope we're not having spaghetti for lunch."



Illustration By Michele Moushey

pedicels, the round-topped stage or platform on which the antlers develop. They can be felt at two months and seen when the male deer is six months old.

Another False Notion (No. 4) is that antlers are an indicator of age. The main reason why they are not is that deer are physiologically different and have grown up in different environments. Generally speaking, age is a factor. The antler beam increases rapidly between the ages of 1½ to 3½ years and slows down, but continues, until the deer is 7½ years old. Number of points generally reach the maximum by the time the deer is 4½ years old, but there may be exceptions. Well-fed young deer may actually have bigger antlers than ten-year-olds who may exist in over-browsed range and may be suffering the drudgeries of old age.

Why are so few dropped antlers found by the sportsman? Edwin Michael gathered data at the Welder Wildlife Refuge in Texas and came to the conclusion that they are not frequently discovered because: (1) there may be a small number of antlers to begin with; (2) they were hidden in spring and summer vegetation; (3) they were badly decomposed by the elements (rain leaching the calcium); (4) or (most likely) they were consumed by various mammals, especially rodents. Michael also found, in 15 percent of his cases, deer eat or chew on their own antlers!

Studies on animal behavior have shown that antler size of a deer affects his personality. There's a certain pride, or self assuredness, a buck enjoys by having antlers. During the summer when the velvet is sensitive, bucks hide in thick brush in order to protect their antlers from accidentally being hit against trees. In other words, they are aware of the antlers.

There is the famous Bruhin-Hediger study at Basel Zoo in which bucks were found to have three social classes: alphas, betas and gammas. The antlers were found to be status symbols. Those with the largest and most developed stood high on the social structure. One day an alpha deer's antlers fell off, as they rubbed against a cage. When a beta deer realized this, it attacked and pursued the alpha deer, which had temporarily lost its status--that is, until the other deer finally lost their antlers, too. The important point: deer seemed to realize loss of status.

There have been cases of whitetailed does bearing antlers. Michigan reports one such case among every 20-30 thousand bucks. Female caribou and reindeer, on the other hand, do exhibit small antlers. Perhaps these species' dependence on lichens explains this evolutionary twist. Caribou and reindeer use their antlers to dig up lichens.

Experiments have shown does injected with the male sex hormone will grow antlers, overwhelming the inhibitory power of ovarian hormones. Also, castration of bucks after the velvet has formed on the antlers results in their falling off after a short while.

Bird of the Month

The Carolina Chickadee

By J. W. TAYLOR

For the chickadee, there is no such thing as right side up. Any side up will do. Topside, bottomside, inside, outside—it's all the same to this nimble sprite. They twist, they hang, swing, tumble and turn in their continuous effort to explore every crevice and cranny, each nook and hollow.

Whatever side up, there is always the same air of confidence, of cheery optimism. There is no day too dreary, no wind chill enough to dampen their spirits. Heedless, they seem, of any danger, perching boldly within a few feet to scold the human intruder. They may even be taught, with a little patience, to take food from the hand.

Though so conspicuous and companionable at other seasons, they seem to disappear during the nesting period. Much quieter then, and busy with family responsibilities, they stay out of sight.

The nest is nearly always in some sort of cavity, usually in an old woodpecker hole. A rather substantial structure, composed of plant fibers, hair and grasses, it is often softened with a lining of feathers.

It was Audubon who, noting the differences between it and its northern relative, the black-capped chickadee, first described for science the Carolina chickadee. His painting of the bird was executed in New Orleans in 1822, as he himself inscribed and dated it. However, in his description, he explains that he named it so "... partly because it occurs in Carolina and partly because I was desirous of manifesting my gratitude towards the citizens of that State. ...". His reference here is to the time he spent at the home of the Reverend John Bachman in Charleston, whom he did not meet until 1831. So Audubon either officially named the bird more than a decade after he painted it, or else he did not at first recognize it as a new species. The latter seems more likely to be the case, since it was Bachman who claimed to have first discovered the nest of the new chickadee, and might well have pointed out the differences between the two to Audubon.



Although these distinctions seem slight to some observers, most taxonomists have agreed that the Carolina deserves full species status. The southern bird is smaller, with a shorter tail and less hoary coloration, especially in the light edging of the wing feathers.

They are more readily distinguished by voice. The "chickadee" note of the Carolina is higher pitched and more rapid. Another call, the whistle given in the

springtime, is clearly two-syllabled in the black-cap; the Carolina's version is more slurred: each of the two sustained notes is preceded by a grace note.

In most of Virginia, identification is simplified by geography. The blackcap nests only in the highest ranges of the Appalachians, descending to lower elevations in the winter. Any chickadee encountered in other parts of the State is likely to be a Carolina.



♂
BLUE GROSBEAK



♂
INDIGO BUNTING



♀
INDIGO BUNTING



♂
GOLDFINCH



♀
GOLDFINCH



♂
TOWHEE



♀
TOWHEE